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THE TRAVELLERS'

MEDICAL & SURGICAL GUIDE

A BRIEF MANUAL FOR EXPLORERS, MISSIONARIES,
COLONISTS AND OTHERS.

PRICE 2s. 6d. IN CLOTH.

WHITING & CO., SARDINIA STREET, LINCOLN'S INN FIELDS,
LONDON.

1888.

MEDICAL NOTES.

PREFACE

The object of this pamphlet is to point out what are the principal dangers that beset the European in Tropical climates, and how best to avoid them; to describe the disorders and diseases there prevalent, and to shew what can be done in the way of proper treatment while awaiting or beyond the reach of skilled advice. Only the briefest statements accord with the design, but it is hoped that clearness is not sacrificed to brevity.

INDEX.

PAGE.
Introductory 1
Clinical Thermometer 1
Hypodermic Syringe 2
Enema Syringe 3
Medicine Dropper 4
Medicine Chest 4
General Hints 5

Disorders and Diseases of the Alimentary Canal—

Indigestion 9
Diarrhœa 11
Dysentery 13
Cholera 17

Fevers—

Intermittent 22
Remittent 25
Typhoid 30
Heat 36
Sunstroke 36
Results of Exposure 38
Snake Bites 39
Insect Bites 40
Table of Temperature 41
Appendix 43

TABLE OF CONTENTS.

CHAPTER I.

INTRODUCTORY.

REQUISITES.

1 Clinical Thermometer:
Purpose; Construction; Method of use .... pp. 1, 2

2 Hypodermic Syringe:
When required; Construction; Apparatus; Care of; Caution; Points of insertion safest; Method of use; Painless injection; Air bubbles; Solutions; Caution; Adult dose always here given pp. 2, 3

3 Enema Syringe:
Caution; Method of use; How to cleanse after use; When useful pp. 3, 4

4 Medicine Dropper:
Purpose of; How filled and used .... p. 4

5 Medicine Chest:
Construction; Contents .... p. 4

CHAPTER II.

GENERAL HINTS.

Changes of habit necessary; Physical labour; Shade necessary; Hours for travel; Dress; Flannel belt; Dangers of draught; Bedclothing; Head-wear; Food: No fats or oils; Meats; Dietary; Caution; Fruits; Milk and eggs; Peptonisation; Coffee; Tea; Milk; Water: Cautions; Acidulated; Drinks; Alcohol; a Good and abundant nourishment necessary; Dwellings; Drainage...pp. 5-8.

CHAPTER III.

DISORDERS AND DISEASES OF THE ALIMENTARY CANAL.

Indigestion: Causes of acute; Remedies; Chronic: Symptoms; Remedies; Undigested food in passages; Acid stomach pp. 9-11

Diarrhœa: Treatment; Diet; Laxatives; Astringents; Opiates; Chronic form; Signs; Diet; Medicines; Absence of bile from the stools; Indications for Mercurials; Pain; "stools" pp. 11-13

Dysentery: Causes; Symptoms; Treatment; Rest; Opiate Enemata; Mercurials; Favourable signs; Irritable rectum; Chronic form; Relapse .... pp. 13-17

Cholera: Symptoms; Diarrhœa; Choleraic stools; Nausea; Cramp; Collapse; Treatment; Preventive; Special measures; Hot foods and drinks; Predigestion of foods; Alcoholic stimulants; Drinks; Medicines; Nausea and Cramps; Danger of abusing opiates; Consequences; Simple Cholera or Choleraic Diarrhœa pp. 17-21

CHAPTER IV.

FEVERS—ORIGIN—CHARACTERISTICS.

Intermittent Fever or Ague: Premonitions; Symptoms; Cold, hot and sweating stages; Varieties of; Body temperature in (*see* Table in Appendix); Preventive means; Pilocarpine; Palliatives; Remedies: Emetics; Laxatives; Febrifuges; Curative means pp. 22-25

Remittent Fever: Symptoms; Favourable signs; Treatment; Mercurials; "Livingstone's Rousers"; Palliatives; Cool baths; Remedies: Quinine; Warburg's Tincture; Sequelæ; Treatment: Caffein; Morphine; Atropin; Dropsy; Signs of insufficient action of kidneys; Caffein as a diuretic; Lemonade; Chronicity; Hepatic and splenic enlargement .... pp. 25-30

Typhoid Fever: Symptoms; Range of heat; Typhoid state; Dangers; Treatment; Caution; Laxatives; Febrifuges; Caution; Restlessness; Delirium; Diarrhœa; Paralysis of bladder; Need of Catheter; Hæmorrhage; Tannin; Quinine; Food; Beverages; Cautions as to solid food and fruits; Alcohols, when indicated; Nutrient enemata; Temperature of Room .... pp. 30-35

CHAPTER V.

SUNSTROKE.

Heat Exhaustion: Treatment ....p. 36, 37

Heat Fever: Treatment: Caution as to carrying it too far; Convulsions; Danger to drinkers of alcohol; How to distinguish alcoholic insensibility from sunstroke of the dangerous sort pp. 36, 37

CHAPTER VI.

Results of Exposure ....pp. 38, 39

CHAPTER VII.

SNAKE BITES.

Venomous snakes; non-venomous; Treatment; Ligature; Hypodermic injections; Stimulants; Insect bites ....pp. 39, 40

CHAPTER I.

INTRODUCTORY.

REQUISITES.

(1) Clinical Thermometer.—PURPOSE—CONSTRUCTION—METHOD OF USE.—The Self-registering Clinical Thermometer is a delicate instrument, intended to show the range of temperature of the body in febrile states, and is capable *in judicious hands*, of affording valuable information respecting the kind of fever present, its severity, and the probable outcome, while it to a certain extent exhibits the effect of remedies and determines the period of their usefulness. The oncome of consumption can usually be long foretold with the aid of the thermometer by the daily slight elevation of temperature. It is important, then, to master the principles involved in its construction and use, and to possess one or two thermometers of undoubted excellence.

The range of this instrument is usually from 96° Fahr. to 110°, these being the limits between which the bodily temperature may rise and fall in disease, *its natural point being from* 98½° *to* 99° *in health.*

A peculiarity of construction consists in the separation of a portion of the mercurial column, *which portion,* when raised by an excessive degree of heat, *remains at the height indicated until shaken down for the next observation.*

In order, then, to prepare it for use, when the *upper edge of the detached register is above* 98½°, grasp the instrument in the fingers of the right hand as one does a pen, *but more firmly*, and then smartly strike the wrist upon the clenched fist of the left hand, examining the register after each blow *until it has been shaken below* 96°.

It may then be placed in the armpit, *the bulb being everywhere in contact with the skin* (*i.e.*, *with no clothing intervening*), and retained there for *at least five minutes.* During all this time it is well to *hold the arm close to the side*, so that air shall be excluded as far as possible. When taken away for examination, it is well to make a record of the heat shewn, and the hour of observation (*see* Appendix) in a table prepared for the purpose, so that the comparative knowledge thus gained may prove available for diagnosis, prognosis, and treatment.

It should, perhaps, be added, that placing the thermometer under the tongue is quite free from the likelihood of error, the patient being told to close the lips but not the teeth. In young infants the temperature is commonly taken in the rectum. The temperature varies a trifle in different parts of the body.

When the temperature has been taken, always wash the thermometer *in cold water*, and having carefully shaken down the register below 98½°, *put the instrument in its case at once.*[*]

(2) **Hypodermic Syringe—When required—Construction—Apparatus—Care of.**—The "Hypodermic Syringe" is an instrument intended for the immediate introduction of medicines under the skin, in certain cases where rapidity and certainty of action are desirable, and where the stomach refuses to accept or retain drugs, or is so inactive that their absorption is very doubtful. It is graduated either upon the barrel or stem to shew how many "minims" (60 minims = one drachm) are contained, or have been injected when in use. There are included in the Burroughs Hypodermic Pocket Case two or more hollow needles, and a bundle of wires, one of which should always be thrust through and kept within each needle to prevent clogging. A drop of oil upon the piston of the syringe every two or three weeks, if not in use, conduces much to its perfect action when suddenly required.

Caution.—The parts into which the injection is to be given may vary, but it is well to *avoid localities where veins are numerous and large, since the introduction of medicaments or air into a vein is often a serious, and sometimes a fatal, accident.*

Points for Insertion.—A very safe place is to be found above the knee over the front of the thigh, or behind and above the elbow over the back of the arm, or over the stomach.

Method of use.—The syringe should be first tested with pure (preferably *boiled*) water, and then filled with water in which the hypodermic Tabloid required has been dissolved. Having *pinched up the skin with the thumb and fore-finger of the left hand*, the needle should be now passed *parallel to the surface, into the textures that have been elevated, to the extent of three-quarters of its length. Withdraw then for a quarter of an inch only*, press the stem and piston slowly yet firmly "home," removing the instrument with a quick motion and placing the forefinger of the left hand immediately upon the puncture, to prevent any leakage of the dose; one minute will usually suffice, when the part may be left, secure from pressure, without a dressing of any kind.

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[*] These expensive and valuable instruments exhibit a strange propensity to fall and break, if left for only a moment unguarded.

Injection.—By rubbing the part for a moment or two, and then pinching up a goodly portion of the skin between finger and thumb, the syringe may be introduced without pain. When the needle has been inserted, the skin should no longer be pinched, as pinching at the time that the fluid is being injected causes pain.

Air Bubbles.—*The last thing before injecting*, the syringe should be held with the needle upward, when the air bubbles will rise; the piston should then be gradually pushed in until the air bubbles have all been expelled, and only the liquid exudes at the needle's point.

Solutions—Caution—The solutions for such medication are best prepared at each time of using, as they inevitably spoil in keeping. Therefore the *Soluble Hypodermic Tabloids* preserved in glass tubes fitted into their "*Hypodermic Case,*" are invaluable.

Doses, always for Adult.—It may well be noted that the dose of medicines used *hypodermatically, is considerably lower than that customary for administration by the stomach;* furthermore, that *all doses given in these pages are for the adult.* In the Hypodermic Tabloids the doses are all correct.

(3) Enema Syringe—Caution—Way to Use.—The "enema syringe" may be properly of the simplest form, of which the "bottle" shape is a type. This consists of an elastic rubber reservoir and rectum tube, which latter *must be oiled before introduction.* Clasping the collapsed bulb in the hand, and holding the tube *well below the surface of the*

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* The use of imperfectly dissolved medicines, or of those requiring a solvent, and especially of solutions which have "stood," often produces abscesses at the site of puncture, and even graver results when the constitution of the patient is in an unhealthy

liquid to be injected, allow the bulb slowly to expand, filling itself to the utmost and leaving no room for air. When the tube is introduced, compression of the bulb in a slow and gradual manner will ensure expulsion of its contents into the rectum.

Other kinds of syringes for this purpose have *valves*, which are apt to become clogged, or even lost by careless handling during the cleaning process.

How Cleansed.—The instrument should always *be carefully cleansed after using*, by filling it repeatedly with hot water, which should be expelled with force.

Cases where useful.—An enema syringe is of great service in certain cases of constipation, to assist remedies given by the mouth; in dysentery, for the local administration of soothing remedies; and for nourishing a patient by the rectum, when there are reasons for keeping the stomach at rest.

(4) **Medicine Dropper.**—The "medicine dropper" is a useful device for the accurate measuring of fluid medicines. It is filled by compressing the bulb between finger and thumb, and allowing it slowly to expand after the point is immersed in the medicine. It may then be emptied drop by drop into water, etc., and this stirred before taking.

(5) **Medicine Chest—Construction.**—The "medicine chest" *should be made of tin* well japanned, or of leather, since the extremes of heat and the dampness of the Tropics will inevitably warp and split one constructed of wood. There are medicine chests prepared in perfect keeping with this guide, which are durable, light, serviceable, compact and conveniently arranged for all requisites. (See appendix, p. 52.)

Contents.—The medicine chest should afford room not only for medicines, but for the requisites already described, some boxes of Rigollot's mustard leaves, etc., and surgical appliances, a list of which may be found in the Appendix.

The great liability to breakage, and consequent loss, should lead one to discard *fluid medicines* as far as possible; while, for the sake of portability, compactness, and exactness of dosage, nothing can excel the "Tabloids" of compressed drugs.*

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* A descriptive list of the medicines recommended in these pages with brief notes upon their uses, will be found in the Appendix.

CHAPTER II.

GENERAL HINTS

Changes of Habit Necessary.—It should be impressed upon the mind that a tropical climate demands of the European a decided change in his habits of work, his dress, food, drink and dwelling arrangements.

Physical Labour.—Ordinarily the same amount of exercise or physical labour cannot be safely performed within the same period of time, nor at the same hours, as in Europe, without entailing serious and unwonted exhaustion — a state which renders one more immediately susceptible to morbid climatic influences.

Shade Necessary.—Whatever physical labour is undertaken must be such as can be performed *under shade*, whether of trees, an awning or double umbrella.

Hours for Travel.—All journeys must be undertaken between the hours of 5.30 a.m. and 11 a.m. (Stanley), liberal supplies of *proper* food provided, and an adequate amount of rest taken in order to keep up the strength.

The blaze of the mid-day sun must be avoided on every occasion, and at all times the head and neck must be *especially* protected.

Dress.—The skin in tropical climates is in such constant activity, that one's garments often reek with perspiration, even when the person is at rest. It is necessary that the greatest caution should be exercised, lest a too rapid evaporation of this moisture from the body bring about a *chill*, which is almost sure to be followed by a corresponding fever of more or less severity (Stanley).

As a protective measure, the underclothing, and, generally speaking, *all clothing*, should be woollen.

Flannel Belt.—It is of much importance in view of the prevalence of diarrhœa and dysentery, that the abdominal organs should be specially protected by a flannel belt, surrounding the body, *and worn day and night.*

Dangers of Draughts.—An extra woollen garment should always be at hand to throw over the shoulders if wet with perspiration, and exposed to winds or draughts, which, at all hours under such circumstances, *are most dangerous foes* (Stanley).

The transitions of temperature from afternoon to evening are very great, and it is advisable when circumstances permit, to change the clothing at sunset.

Bedclothing.—Woollen blankets at night are a prime necessity, one of which at least should reach the shoulders.

Head-wear.—By day, the ordinary helmet with cape—which may be kept wet if travelling under the sun's rays—or, better still, the "Congo Cap" (Stanley's) should protect the head.

—The very pronounced tendency to exhaustion after apparently trivial exertion, indicates a necessity for *an ample supply of easilv digestible foods.*

No fats or oils.—Bearing in mind that there is a lessened need for "heat-producing" foods, it is not well to indulge in fats or oils, especially as these make strong demands upon the liver and other digestive organs, which are liable to many disorders in tropical climates.

Meats.—Nor is even lean meat so necessary as in temperate zones, since the process of utilising and excreting it, etc., throws too heavy a burden upon the liver and kidneys.
Mr. Stanley commends the flesh of the native goat as being more acceptable than the tinned beef and mutton which are usually supplied on the coasts of Africa.

Dietary.—Mr. Stanley recommends the early Continental breakfast of coffee or pure tea with condensed or goat's milk, with good bread (rather than biscuit) if it can be obtained; at 11 a.m., a *déjeuner* of *lean meat*, or fish and vegetables, as rice, lentils, carrots, onions, or native greens—dry bread, and tea with milk; at 6.30 p.m., a "prudent dinner" of boiled fish, roast fowl, roast mutton, a change of vegetables, dry bread, rice, sago, tapioca or macaroni pudding, and possibly a little "weak Claret, or two ounces of Madeira with water, or an equal amount of Champagne and water."

Caution.—The coarser grains should be avoided when the least tendency to diarrhœa or dysentery is present.

Fruits.—Fruits with abundant seeds and hard skins are always objectionable. Oranges, mangoes, ripe bananas, guavas and papaws, and the *juice only* of pineapples, may be taken *sparingly in early morning,—never later in the day* (Stanley). *Avoid them entirely in sickness*, as being *specially liable to cause indigestion*, and *to provoke irritation of the bowels.*

Milk and Eggs.—Milk and Eggs are fairly safe and most nutritious aliments, and may enter into preparations made of grains, with great advantage.

Peptonisation.—*It is always wise to scald milk before taking it*, and during invalidism or attacks of fever it is often essential to "peptonise" milk to ensure its digestion and absorption. "This is to be accomplished by adding one *Zymine Peptonising Powder* (Fairchild) to a pint of milk diluted with ¼-pint of pure cold water. By setting the mixture in water, as hot as the hand can bear, it will be ready for use in about 20 minutes. When the milk is not intended for immediate use, the process of peptonisation (which if prolonged will result in bitterness) may be arrested by bringing the fluid to a quick boil, when it will remain for some time in a sweet and palatable condition."

In the progress of certain diseases of the alimentary canal, this *artificial predigestion of milk can scarcely be over-estimated* as a factor in successful treatment, and many a case of tropical dysentery, or even of the dysentery and typhoid fever of temperate climates, has been lost for lack of such a food, bland, unirritating and perfectly assimilable as it is.

Coffee—Tea—Milk.—Coffee, tea (pure and good) and milk must and *will* compensate for abstinence from alcohol.

Water—Cautions—Acidulated.—*Water should always be boiled before using as a beverage.* It should *never be taken from swamps*, should be filtered* if possible as well as boiled, and can be made more palatable by dissolving a quarter of a teaspoonful of *Citric Acid* in each glass, and then sweetening.†

Drinks—Alcohol.—Alcoholic beverages, *as such*, had better be banished from the stores, *or reserved entirely for medicinal purposes.* If taken at all, use only claret or

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* Maignen's "Filtre Rapide" has won a good reputation in Egypt.

† It is a great and mischievous error to suppose as even so experienced a traveller as Rob Roy seems to do (*vide* Rob Roy on the Jordan) that a spoonful of brandy added to impure water has any tendency to neutralize its noxious properties. It has no such effect.

Madeira, as directed by Mr. Stanley, *with dinner, and "never by daylight,"* when the heat of the sun doubles the effect of alcohol upon the brain, and "emboldens one with a false courage which may be fatal."

Good and Abundant Nourishment Necessary.—It should be repeated that, as tropical climates are debilitating, and their diseases especially tend to an impoverishment of the blood and to states of exceeding nervous or vital depression, it is of the greatest importance to sustain the physical powers both in health and disease by *proper food*, the neglect of which has alone cost many a valuable life (Prosser James).

Dwellings.—The dwellings, temporary or permanent, should be situated to the *windward of morasses or rivers*, regarding prevalent air currents. They should not be placed in situations exposed to cold bleak winds, as between adjacent mountain ranges, or in deep hollows where there is little ventilation, and the rays of the sun beat down with redoubled violence. A moderate elevation upon wide plateaus, where there are pleasant currents of air without confined or rushing winds, or a hot and stagnant atmosphere has proven healthiest.

"The lower story should be clear of the ground, unless the floor is made impervious to damp by cement or asphalt. On a grassy plain the floor of one's living room should be *at least twelve feet above the ground*" (Stanley).

Drainage.—Good drainage is of great importance, and its relation to the water supply must be accurately determined. If rain water be used for drinking purposes, its receiving reservoirs must be kept scrupulously clean and free from all organic matters (dead leaves, grasses, etc.), and should never be below the surface-level. Though water be taken from a spring or stream, it should *nevertheless be boiled*, if there is any possibility of contamination at the source or in the course of the spring.

In districts where ague is prevalent it is very important not to be abroad but to remain indoors during the night and early morning hours, say from 6 p.m. to 5 a.m., as it is during these hours that the ague miasm is most deadly. The traveller should make it a rule never to stir out in the early morning on an empty stomach. He must at least take a cup of hot coffee if he cannot breakfast.

CHAPTER III.

DISORDERS AND DISEASES OF THE ALIMENTARY CANAL.

INDIGESTION.

NAWAB SALAR JUNG BAHADUR.

Indigestion may be "acute" (sudden and temporary), or "chronic" (more or less continuous and recurrent).

Causes of Acute.—The acute form arises from imperfectly masticated, uncooked or poorly-prepared food, or from full meals *taken when chilled or exhausted.*

The symptoms are discomfort or pain in the region of the stomach, more or less intermittent and spasmodic, experienced usually within two hours after eating, attended often by much flatulence, and eructations of a hot sour fluid, sometimes by giddiness and headache.

Remedies.—The treatment consists in emptying the stomach, by inducing vomiting. The finger in the throat, a glass of warm water with a teaspoonful of mustard stirred in it, or a dose of 15 grains of *Ipecacuanha* (or 3 5-gr. tabloids crushed in water), repeated if necessary, every 20 minutes, will secure this end. (The matters vomited should always be inspected in order to learn what in future to avoid.)

A mustard leaf dipped in warm water and applied to the painful region, and kept there *till the skin is decidedly reddened*, brings often great relief. But if pain still lingers, or recurs in the lower part of abdomen, adopt means to secure the rapid clearance of all offending matters from the bowel. The laxatives should be of a kind which do not disturb the stomach, for after the organ has once been cleared it should be allowed perfect rest for a time. A five grain Calomel Tabloid is excellent, as are also the "Vegetable Laxative Tabloids," which cannot salivate. One of the most effective of all known agents for pain in the stomach is Nux Vomica. If taken early it will almost always relieve the pain. Two grains of opium are effective, but have unpleasant after-effects. After these attacks it is as well to take a cathartic, preferably one or two of the Comp. Cathartic Tabloids, *i.e.*, where no previous laxative has been given. If flatulence is a common symptom, take the Compressed Soda-Mint Tabloids. As long as there is any tenderness over the stomach, the diet should be peptonised with Fairchild's Zymine, for solid food will but tend to aggravate matters. Bits of solid cod fish, dried beef—both well masticated—and small draughts of cold black coffee may be the first step toward solid food after a bad attack. The Peptonic Tablets should be taken in doses of two or three after each meal, and the Nux Vomica, 10 drops in a wineglass of water, three times daily for some time.

CHRONIC INDIGESTION.

The chronic form of *Indigestion* is due to the same causes (above-mentioned) repeated frequently,—to the impoverishment of the blood and consequent debility of the whole digestive apparatus, the result of long or frequent exposures to malarious influences, or to imperfect recovery from acute and exhausting diseases or to continued indiscretion.

Symptoms.—The symptoms are not unlike those already detailed for the acute form, but are less severe. Sometimes they follow the meals at longer intervals, at others not, and are at times accompanied by diarrhœa alternating with constipation. The tongue is usually coated and "sticky," the head uncomfortable, and the mental faculties are depressed. In common parlance the chronic dyspeptic always feels the presence of his stomach. Generally speaking a *Chronic* disease is one that lasts more than six weeks.

Remedial Means.—Remedial measures must begin with simplifying the diet, taking food regularly but often, and in smaller quantities than usual, using meat only in form of strained broths, making the grains with milk into gruels, or taking peptonised milk (see page 7) alone, or with egg custards. Plain wheat bread, *if good*, toast or biscuit may be added.*

Vegetables and condiments should be discarded, except where there are *idiosyncrasies.*

Undigested Food in the Stools.—If the stools are loose and contain portions of undigested food, one or two Peptonic

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* The writer knew a physician who for forty years lived and thrived upon an exclusive diet of chocolate prepared with milk, and baked potatoes. Thus only could he free himself from this *bête noir.*

Tablets should be swallowed whole after each meal. When nausea and diarrhœa are present, the Bismuth Tabloids should also be taken at the same time. If debility be prominent, conjoin with this treatment a Tabloid of Quinine, Arsenic and Strychnine; or, the milder but very useful tonic, Bismuth Tabloids,* one just before each meal, may be taken with the Peptonic Tablets, and ten drops of Nux Vomica in water, after food three times a day until the strength be improved, when two Tabloids each day will prove sufficient for progress. When symptoms have disappeared, one Peptonic Tablet after the largest daily meal, for one or two weeks, will be advisable.

Acid Stomach.—To correct acidity of the stomach alone, two Tabloids of Soda-Mint taken when it occurs, will prove very efficient. To cure, take 5 drops dilute Muriatic Acid in a wine-glass of water, before meals, with Quinine and Nux Vomica.

DIARRHŒA.

Diarrhœa from simple weakness or irritability of the bowels, or from indigestion, etc., may be quite obstinate. The stools are "biliary," too loose and frequent.

Treatment—Diet.—Diet must exclude everything that appears in the passages as undigested, and must be simplified as in case of the indigestions.

Laxatives—Astringents—Opiates.—If the diarrhœa come on suddenly, the bowels should be cleared of all irritating matters by a laxative, such as a tablespoonful of castor oil and lemon juice, or a *"Laxative" Tabloid.* Afterward, if still persistent, a mild opiate and astringent *to simply check* (not "bind") the bowels will be of service. Such a combination is Lead and Opium,—one or two tabloids to be taken *after each loose passage.* The remedy should be discontinued when the stools attain consistency and form. If not successful, take one Tabloid of Opium and Camphor after each *loose* movement, under the same conditions. *Once in three hours is usually as often as the opium is required.*

CHRONIC DIARRHŒA.

Frequent attacks of Diarrhœa show a tendency in the disorder to become chronic, and instead of being evidence of functional disorder merely, may indicate a state con- gestion or even of inflammation. They are often indicative of the presence of foreign matter in the intestine, keeping up the irritation. The cause should be carefully sought out and remedied. A full dose of Castor Oil with Opium has often cured chronic diarrhœa.

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* The stools will always be blackened by Bismuth or Iron. This is of no consequence.

Signs.—The stools in chronic diarrhœa are frequent, and may be in part solid, portions being covered with a film of mucus, and in part fluid, dark, offensive, and at times spotted with blood. Spasmodic pain precedes a discharge, and there is general abdominal tenderness. When this disease shows a tendency to become dysenteric, mucus appears in gelatinous masses or shreds, scattered through the stool and mixed with blood.

Diet.—In order to successfully master this disease, *the most thorough and continued caution must be observed, a single error of diet sometimes undoing the work of weeks.*

Vegetables, fruit and *jams*, must be rigidly excluded, and *peptonized milk* should form the chief diet until progress be assured.

The first changes made when this is observed, may consist in the addition of flour to make a thin gruel, or of corn-starch, or arrowroot. A little nutmeg or spice will often add much to the palatability of these preparations. The white of an egg, uncooked, *and stirred* (not beaten) in water, sweetened and fortified with a dessert-spoonful of spiced brandy, makes an acceptable variety, and may be taken three or four times a day in states of debility. Peptonised foods are of the very greatest utility.

A recumbent position, largely maintained, goes far toward alleviating and cutting short this disease, as does abstraction from all sources of worriment.

Medicines.—When indigestion is made manifest by the stools, two Peptonic Tablets or Pepsin Tabloids may be taken three times daily.

Absence of Bile from Stools—Indication for Mercurials—Pain.—When the passages are clay-coloured, possess no natural fæcal odour, *are semi-solid*, and sour-smelling, take a grain of Calomel and half a grain of Ipecac. every night till the stools resume a yellowish or brownish appearance. When pain is decided, take (in addition to the remedies already mentioned) one Bismuth and one Opium Tabloid every two, three or four hours until it abate. This last remedy is not commonly needed where proper care is taken to avoid indigestible food. The Lead and Opium Tabloids are excellent, after the mercurial has done its work, if the movements remain too loose and occur too often.

"Milk Stools."—It should be known that an exclusive milk diet produces in the adult drab-coloured stools, which are usually homogeneous and pasty, and if mixed with water will stain it yellow.

This would not be an indication for Calomel, which restores the biliary and glandular secretions when lacking.

DYSENTERY.

Dysentery is an inflammatory disease of the large intestine. (The large intestine extends from near the right groin to the liver, thence transversely across the abdomen, and thence downward to the rectum). It is indicated by frequent and painful calls to stool, the act being attended by much straining and the extrusion of small motions consisting chiefly of mucus mixed with blood. If severe, the disease may be accompanied by fever, but the range is rarely above 102°, unless complicated with decided malarial symptoms. The inflammation is always most marked in the rectum and descending part of the large intestine.

Causes.—Dysentery is either *epidemic* or *sporadic*. It may follow, as their consequence, the disorders considered in previous pages, or arise from prolonged constipation, undue exposure to the sun, to cold or wet, or to the chilly air of night after exhaustive fatigue. It not infrequently depends upon malarious poison, and is sometimes coincident with or follows an attack of malarial fever. Commonly, ulcers are formed in the bowel, the whole gut being lined with them. In healing, these sometimes constrict the bowel, and produce a permanent stricture, with constipation.

Symptoms.—Both forms of dysentery begin with diarrhœa, after constipation or irregular stools. The patient is listless and weak. In from three to five days the diarrhœa becomes worse. There are rigors and abdominal pain. The desire to go to stool is irresistible, and the pain and burning about the rectum and anus are very intense.

The patient wants to be constantly on the vessel, strains himself extremely, but usually passes only blood, mucus, charred-looking fragments, "little white clumps, or round bits looking like minced raw meat." No relief is obtained by the passage of these motions, pain keeps up, and this state of things may last for six or eight days, the symptoms being better in the morning and worse at night. The pain may increase, the stools be passed involuntarily, and the patient sink and die. In a mild case recovery should be complete in three weeks, and in about two months in one ordinarily severe. The mortality in epidemics is 40 or 50 per cent., but sporadic cases as a rule recover.

Inactivity of the liver and glandular apparatus is recognised by the absence of ordinary biliary (feculent) matters from the stools.

Treatment—Rest.—Recumbency, continued until the passages become natural, and mucus and blood have disappeared, is absolutely essential.

If the attack have been sudden, with prior constipation, the whole bowel should be cleared by two table-spoonfuls of castor oil, with sufficient lemon juice to cover taste. One Tabloid of Morphine (1/8 gr.) may be given simultaneously if pain is severe. If diarrhœa have preceded the onset, the cathartic may be omitted, and treatment with Ipecacuanha begun.

Ipecacuanha should be given in doses of from 20 to 40 grains (4 to 8 tabloids crushed in water) every four hours, washed down with a little milk. The first doses may be vomited, but rarely if a Tabloid of Opium (1 gr.) have been given 30 minutes before; tolerance, however, is soon established, and the full repeated doses bring about copious biliary (feculent) stools which clear away offending matters, and replace the morbid secretions by others that are normal and unirritating. When ipecacuanha has accomplished this much, it has done all it can do, and should be discontinued. Rest and strict attention to hygiene and diet will usually complete the cure, when the disease is not epidemic.

The above plan of giving ipecacuanha has been successful, but mainly in proportion to its early employment. If not early administered, or if unsuccessful, the following may be *apropos*: give castor oil to clear out the intestines, and let it be followed by mild opiates, preferably a Lead and Opium Tabloid, or two Tabloids of Dover's Powder (5 gr. each) every hour or two to secure rest for the emptied bowel and relieve pain.

Should eight or ten hours pass without a movement, such a dose may be repeated only in four or six hours, and be omitted entirely when a day has elapsed without trouble. But if the stools continue frequent, exhibiting a preponderance of mucus over feculent matter, much relief can be obtained from warm water enemata containing each, one Morphine Tabloid (1/8 gr.) previously dissolved in a little water.

Opiate Enemata.—These may be gently injected into the rectum from the "enema syringe" after a movement, once in three or four hours, according to the frequency and pain of the passages; an effort should be made to retain them as long as possible. The retention of the enema will be greatly facilitated by the nurse's approximating the buttocks by gentle compression with the palm of the hands, the patient meanwhile lying "upon the stomach." If efficient, the interval between the doses must be increased, and the opiates, as before enjoined, entirely omitted when a day has elapsed without pain or passage.

The relief afforded by enemata, and their importance, are very great. The patient may be almost narcotized with opium, and yet, if the enemata are witheld, suffer with the pain in the anus and the desire to be on the vessel. About four table-spoonfuls of fresh warm starch water with the requisite amount of opium or morphine, will generally relieve the tenesmus for two or three hours.

Mercurials.—If there be a tendency to recurrence of the mucous stools, it will be advisable to administer a mercurial to revive the activity of the liver and other abdominal glands. One of the Calomel and Ipecac. Tabloids may be given every night till feculent (biliary) matters appear in the passages, when the remedy should be omitted.

Favourable Signs—Irritable Rectum.—The change to a natural appearance in the stools is evidence of at least temporary relief to the inflamed parts, and the continuance of this appearance, other things being equal, is the best proof of convalescence. Irritability of the rectum often succeeds Dysentery, the organ having lost some of its retentive power. This must not be taken as a return of the disease, an habitual inspection of the excreta sufficing to determine the absence of morbid products. It is best to treat this irritability with enemata of thin starch water (boiled), or of warm water, holding in solution one-half of a Morphine Tabloid, 1/8 gr., administered morning and evening, and retained as long as possible. Hazeline may be taken internally in doses of a teaspoonful three times a day.

CHRONIC DYSENTERY.

In spite of all efforts, Dysentery, under unfavourable and predisposing circumstances, may become chronic.

Unless complicated, the fever of the acute form will have disappeared, pain will be less, and continued recumbency no longer so necessary, although prolonged exercise will usually aggravate the symptoms. Some of the passages will appear almost normal, others will be covered with a pellicle of mucus, while others still may be small and consist only of dysenteric products.

A change of residence becomes usually necessary in chronic dysentery, though much may be done by remedies which stimulate the mucous membranes, and are of a balsamic nature. Five to ten drops of Turpentine taken upon dry sugar thrice daily, simultaneously with one or two Tabloids of "Dovers," 5 grs., will sometimes greatly mitigate the symptoms. Occasionally the turpentine will produce in males uneasiness at the neck of the bladder, when the dose must be lessened or temporarily omitted.

In the latter case, Bismuth in doses of from two to four Tabloids (5 grains each), with a Tabloid of Dover's powder, may properly take the place of the Turpentine.

As the efficiency of the Bismuth depends upon its local action, the dose should be quite large. Bismuth often causes "inky" stools, the colour being due to the action of gas (sulphuretted hydrogen) on this metal.

Injections into the rectum of diluted Hazeline, two tablespoonfuls to eight of warm water, will under the same circumstances prove useful.* This must be retained. Hazeline may also be taken in drachm doses by the mouth three or four times a day.

Relapse.—If general abdominal tenderness reappear, with renewed coating of tongue, loss of appetite, giddiness and headache, and especially if biliary (feculent) stools appear but rarely, or are altogether absent, a mild mercurial should again be taken, preferably a "Livingstone's Rouser," every 3 or 4 hours, to be discontinued as soon as normal biliary stools appear.

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*Care must be taken that the syringe be thoroughly disinfected before anyone else is allowed to use it. The stools should always be disinfected.

The usefulness of Quinine in Dysentery is limited to those cases in which the disease has arisen in connection with malarial fevers, and is dependent apparently upon the same cause as these. The drug may then be given as directed on page 25 in full doses once a day, or thrice daily in smaller quantities (one Tabloid, 3 grs.), as an appropriate tonic in the chronic form when convalescence is tardy.

CHOLERA.

Two varieties of cholera are recognised, viz., *Choleraic Diarrhœa*, and *Asiatic Cholera.*

Choleraic diarrhœa is usually a mild disorder arising from the presence of undigested food within the bowels, coincident with the depressing influences of undue exposure to the rays of the sun, or of a chill after exhaustive fatigue. This disease is rarely epidemic, and a fatal result is uncommon.

Asiatic Cholera has been alleged to arise from contaminated drinking water (containing the bacilli of Koch), under like depressing circumstances. The disease is distinguished by a tendency to early collapse of all the vital powers, usually ending in death; or, if the patient revive, it may be only to pass into a febrile state of the typhoid type, where he sometimes lingers between life and death for days before hopeful symptoms appear. The disease is commonly epidemic.

Symptoms—Diarrhœa—Choleraic Stools—Nausea —Cramp.—In the early stages the two forms of cholera are similar. Diarrhœa generally precedes the characteristic developments, which are (1) profuse, watery, usually frequent and painless stools, devoid of the colour or odour of normal ("biliary") passages, resembling thin pea-soup, or dirty rice water. (2) Nausea speedily follows, and the matters vomited resemble those passed from the bowel. (3) Cramps in the calves of the legs, thighs, feet and hands, and sometimes of the trunk, occur simultaneously with the evacuations, and torment the patient. Here the forms diverge, "Asiatic cholera" tending to speedy collapse, despite remedies, "choleraic diarrhœa" rarely going so far,

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but yielding quickly to proper medication and good nursing, and convalescence being almost immediately established and rapidly progressive.

Collapse.—The collapse of Asiatic (or "true") cholera is ushered in by a sense of physical and mental exhaustion and indifference, with deathly pallor of the face and hollowness of eye, a sepulchral voice (or its entire loss), a shrunken withered condition of skin, with extreme coldness of the extremities and even of the tongue and breath itself, while the victim complains of heat. The pulse becomes very rapid and feeble, till altogether lost. Simultaneously, the body temperature falls below the "norme," and has been found before death as low as 92°F. The bladder is empty, but there are intense and frequent calls to micturate. Passages occur unconsciously, or cease to find vent, while the abdomen becomes greatly distended by the accumulation of fluid within, and unless reaction take place, death speedily ends the scene. In tropical countries the patient often "falls down and dies within one or two hours, without vomiting or diarrhœa."

All the symptoms above enumerated point to severe shock of the nervous centres (brain and spinal cord) with a consequent more or less complete extinction of vital processes so far as the alimentary canal is concerned.

Treatment.—The object must be, first, to check the diarrhœa; and second, to revive and restore the glandular system of the bowels to normal activity. If successful, a fearful waste of fluids will be averted, the stomach will resume its functions, and recovery ensue.

Preventive.—When an epidemic of Cholera is present, all one's hygienic surroundings and sanitary arrangments should be carefully scrutinized.

The clothing during both day and night must be woollen, and a flannel belt by no means omitted. The water-supply must be of the best, and all water that is to be drunk must be boiled and cooled in a safe place.

In view of recent researches, some of the mineral acids may be taken with the water, preferably 10 to 20 drops of the Aromatic Sulphuric Acid to a glass of water (since it is astringent, and an excellent antiseptic), three or four times a ay. The acid may be continued during the precedent diarrhœa, but given up when choleraic passages appear, and the necessity for other and more powerful remedies arises.

During diarrhœa proper, the injunctions given upon page 11 should be followed, and the acid mentioned given between other remedies there indicated.

Special Measures.—On the first appearance of true choleraic symptoms envelop the patient, undressed, in woollen blankets, and apply bottles of hot water (in woollen stockings) next the thighs, calves and feet. Mustard leaves or poultices must be again and again applied to the spine throughout its entire length, and over the entire chest and abdomen; if smeared with the white of an egg they will not blister.

When decided redness is present, they may be temporarily removed, but are not to be dispensed with till the general colour and warmth of the body have become normal. The *burns* of a mustard poultice are difficult to heal, and it should be used with some caution, especially in children.

The patient must on no account rise for passages, and a vessel of some convenient shape should be always at hand to be placed under him when required. Immediately remove the discharges from the room; a powerful disinfectant should be thoroughly mixed with them (e.g., a tablespoonful of the "Liquor of Chloride of Zinc," B.P., or a teaspoonful of the Saturated Solution of Carbolic Acid to each stool), before they are thrown out; and the receptacle should be afterwards washed and disinfected (with a weaker solution) before being used again.

It is well to keep a dry and clean cloth under the patient's hips, which must be removed and at once burned when it becomes wet.

Hot Foods and Drinks.—On the well-founded hypothesis that the death-like loss of body heat is to be combated in every way, all drinks and foods should be given as hot as they can be swallowed, in small quantities and often, quite irrespective of vomiting. The powers of the stomach being in abeyance, all fluids must be nutritious, but very dilute, and predigestion with Fairchild's Zymine is of the greatest importance.

Predigestion of Foods.—Peptonized milk (see p. 7), hot, in teaspoonful quantities, or more if tolerated, every five minutes, and beef-tea (not essence) prepared by adding as much Zymine (Fairchild), as will lie on a one shilling piece, to a coffee-cupful of beef-tea may be given alternately with the milk, or as a change from it.

Alcoholic Stimulants.—Alcohols are not permissible by the stomach, but whiskey and water, equal parts, may be used hypodermically (*see* Introductory Chapter), a syringeful being administered every 20 or 30 minutes till reaction is established (Jones).

Drinks.—Black Coffee, by the teaspoonful only, may be useful occasionally, and hot toast water may much diminish thirst. Rice, browned over the fire and steeped, makes a drink which is acceptable to many.

Medicines.—First give a hypodermic injection of a Tabloid containing Morphine ⅛ gr. and Atropin 1/100 gr., dissolved in a syringeful of boiled water. Rain water, if pure, will answer. If surface warmth and colour do not return within an hour, this may be repeated, but not a third time. After the first injection give a Calomel and Piperine Tabloid (with a little milk or beef-tea), and repeat every 20 or 30 minutes, if the passages occur as often as that. When they appear at greater intervals, give the Tabloids from every 40 minutes to one hour apart.

Let the stools be carefully inspected, and when biliary (normal) matters appear like "floating islands" upon their surface, discontinue the remedy. There is no more reliable evidence that reaction has begun than this appearance. It is commonly preceded by marked relief of nausea, and a distinctly lengthened interval between the passages.

Nausea.—Meantime, if nausea be extreme, one drop of the Saturated Solution (90 per cent.) of Carbolic Acid may be given midway between the doses of Calomel and Piperine in a tablespoonful of boiled or rain water.

After the fifth dose, it had best be given only once in two hours, or discontinued if unavailing.

Cramps.—If cramps be severe, one hour after the second and last hypodermic injection has been administered, 10 grains of Chloral, dissolved in four syringefuls of water,* may all be injected in like manner, and repeated every two hours if necessary.

If the third dose prove useless, give up the remedy.

Should the passages cease altogether without a corresponding amelioration of other symptoms, examine the abdomen; if this be greatly distended, give a copious enema of warm water, salted moderately, to produce an evacuation of the retained fluids.

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* The Chloral should be thus well diluted, as it is apt to cause abscesses.

Gentle movements of the hands over the bowels contribute to this end, as do flannels wrung out of hot water, and sprinkled with turpentine.

In case of imminent danger, to be recognised by the failure of all these means to effect reaction, the hypodermic injection of whiskey (*see* pp. 2, 3 & 20) may be resorted to every five or ten minutes until some revival is apparent or death occurs. The occasional survival of one who has apparently breathed his last is warrant for the constant and unremitting attention of the friends to every detail until hope is no longer possible.

Abuse of Opium.—Finally, it is necessary to observe that the common and abundant abuse of opiates in the treatment of cholera, particularly in the absence of skilled advice, leads to the worst of results; it is very apt to lull both patient and friends into fancied security by its superadded stupefaction of the vital powers, contributing to the retention of noxious products within the intestines, retarding convalescence and adding to the "typhoid" and feverish depression which is apt to constitute the after-stage of this disease. (For treatment, *see* pp. 34 & 35). The doses of opium recommended for preliminary diarrhœa and the first hours of choleraic symptoms, are all that ordinarily should be trusted to non-professional judgment.

Consequences.—The greatest prudence and care must be exercised during convalescence, lest chronic diarrhœa or dysentery supervene (*see* Chapter II., Food and Dress).

Every article of clothing or of bedding that has been soiled by choleraic discharges must be burned.

CHOLERAIC DIARRHŒA.

Simple Cholera or Choleraic Diarrhœa.—In simple cholera, when no epidemic is recognised, any apparent tendency to collapse may be met as indicated in these pages on the graver disease, the same remedies (given with less frequency in choleraic diarrhœa) being appropriate to both.

CHAPTER IV.

FEVERS.

Origin.—The fevers far most commonly met with in the tropics are malarial and miasmatic in origin.

Characteristics.—Intermission and periodicity of return are the prominent characteristics of all malarial fevers. As these features are lost we approach another class representing morbid and organic changes in special organs, of which typhoid fever is the type.

Intermediate between these extremes lie the remittent and "pernicious" fevers which present so continued a saturation of the body with malarial poison, that the nerve centres are overwhelmed, their control over the nutrition and functions of important organs being lost, and a state bordering upon organic change brought about.

INTERMITTENT FEVER OR AGUE.

This is so called because of the intermissions between the attacks, which recur regularly and with similarity.

It is due to a malarial poison, to the production of which three conditions are requisite : porous soil, moisture, and a certain degree of warmth. Decaying vegetable matter is an adjunct to its production. It is most common about marshy districts, and appears often when the turf is turned, or when a street is opened. It is most active during the night, and near the ground ; soldiers sleeping on the ground are apt to have it. On this account the upper rooms in many places are the best. The poison may be conducted by the wind ; hills and trees intercept it, and the surfaces of lakes absorb it as it is blown over.

A person who has had intermittent fever is more apt than ever to have it again. It is not contagious, and is most common in autumn.

The conditions that favour its absorption and morbid effects within the system, are those which lower the vitality, of which mental anxiety, great and exhaustive fatigue, long exposures to the sun's rays, or to cold and wet, and "chill after excessive perspiration" are examples.

Premonitions.—The premonitory symptoms are languor, drowsiness, lost of appetite, headache, feverishness, coated tongue, often constipation due to inactive liver, backache, wandering pains in the limbs, and sweatings in the early morning hours.

Symptoms.—An attack of ague usually comes on suddenly, though it may be gradual. The patient may have an attack and be over it in a few hours, to be attacked again the next day, or the second day, or the third day, and so on in cycles.

The attack consists of three stages, cold, hot, and sweating respectively.

The *cold stage* begins with shivering, and the victim may shake like an aspen leaf. The teeth chatter; the skin is pale and dry; the breathing and pulse are quick; and there are backache, pains in the limbs, and headache. The temperature gradually rises, and in from half an hour to two hours the hot stage appears.

The *hot stage* appears at first as a comfortable warmth, but soon this becomes excessive. The face is congested and red, and there are headache and occasionally delirium. This stage lasts from one to four hours, and sometimes longer.

The *sweating stage* follows the last, and in it the skin becomes bathed with perspiration, and all the foregoing symptoms abate. The patient may now fall asleep and awake all right.

Varieties.—Each attack with its three stages is repeated, commencing every day at the same hour, when the fever is called a "quotidian," or every other day ("tertian"), or every fourth day ("quartan").

There are variations of these several forms. A second paroxysm may occur within the first day of 24 hours, and a single one upon the third day ("double tertian"), or there may be a severe attack on the first, a milder one on the second, and none at all on the third, with a return of severe character on the fourth ("double quartan"), but all forms will be distinguished by a definite period of freedom from fever and tolerable comfort.

Temperature in Cold Stage.—Though the patient be "chilled," the thermometer will demonstrate an actual increment of heat during the cold stage, amounting to one or two degrees above the *norme* (*see* Introductory Chapter). It is reported that this stage, in Africa, is sometimes passed unnoticed by the patient.

Temperature in Hot Stage.—In the commencement of a subjective consciousness of fever, the mercury is found rapidly mounting till it attains sometimes 107° Fahr., which is slowly receded from, as sweating begins and continues, till the body resumes the normal range of 98½° and the intermission is established.

The hour for renewal of this series of changes may be anticipated if uninterfered with by treatment, or postponed if treatment be successfully inaugurated. Observation during the hour or two immediately preceding a paroxysm will often shew a temperature reduced below *norme.*

Preventive Means.—When in malarious districts, many travellers are alleged to have succeeded in preserving themselves from any malarial outbreak by taking four or five grains of Quinine (or one Tabloid, 5 grs.), on retiring, or at early dawn every day. Black coffee and lemon juice have each their advocates to the same end, when taken with or without the quinine.

Pilocarpine.—When paroxysms have occurred and their hour of advent can be confidently predicted, a hypodermic injection of Pilocarpine, 1/10 gr. (one Tabloid), half an hour antecedent to chill, will, by reason of the profuse sweating following it, break up the expected attack or very much mitigate its severity.

Two of the 1/10 gr. Tabloids taken by the mouth an hour before chill, will accomplish the same purpose.

Palliatives.—When anticipating, or upon the accession of, the cold stage, the patient should betake himself to bed under warm coverings, taking warm or hot drinks (not alcoholic) to promote the skin's action. When fever is apparent, the coverings should be gradually laid aside until preferably a single blanket remains; the drinks should be cooling, and spongings of the wrists, hands, and feet once each half hour with cool water may be resorted to with good effect until sweating begins.

Frequently wiping the body, still under cover, with dry cloths or flannels, upon which Essence of Camphor or vinegar has been sprinkled, will much mitigate the patient's discomfort.

Remedies—Emetics.—If the stomach be full of undigested food when the *chill* begins, an emetic will shorten this stage (*see* p. 9).

Laxatives.—The first indication is to get a *free* action of the bowels; give two "Livingstone's Rousers" at once.

Febrifuges.—During the hot stage a sudorific-and-febrifuge is useful. Give, at its commencement, three or four Tabloids of Antipyrin, 5 grs. each. This dose does not often require repetition, but if the temperature rise at the rate of more than one-half a degree every hour, two Tabloids more may be given two hours after the first dose.

Curative means.—Quinine is considered a specific for this fever. It may be given in one dose of four Tabloids, 5 grs. each, an hour or more before the time for chill, or it may be administered in ten grain doses (two Tabloids) every four hours, commencing with the appearance of the sweating stage, and continuing till the next chill has commenced or failed to appear, if a "quotidian;" or for twenty-four hours, and then once in eight hours on the second day, if a "tertian."

When an anticipated paroxysm does not occur, two tabloids (5 gr. each) may be taken morning and evening till another attack is also aborted, when a single dose at night for a week, will probably effect a cure.

The thermometer will prove the best guide afterward in determining the necessity for a return to Quinine.

If, while the patient feels even tolerably well, the temperature ranges from 97½° or 98° at dawn, to 100° at noon of any day, there is abundant evidence of a necessity for its continuance. (For table of temperature common in Intermittent Fevers, see Appendix).

The paroxysms shew a decided inclination to recur at periods of seven days.

Previous attacks not only render a European more susceptible to malarial poison, but often produce Sequelæ of a serious nature. (*See* Sequelæ of Malarial Fevers, p. 28).

REMITTENT FEVER.

This is also a malarial or marsh fever, principally occurring in tropical climates. It resembles intermittent fever, but in the intervals between the attacks the fever only remits or partially gives way. The thermometer will shew certain variations of temperature occurring regularly, and evidencing that quality of periodicity which always declares a malarial origin. (See Appendix for Table of Temperatures common to remittent fevers).

Remittent fever is the form most commonly attacking new comers in unhealthy and malarial countries; it is usually then very severe, but not so likely to recur, survivors, if affected at all, being more subject to attacks of intermittent fevers when remaining in the same localities.

Symptoms.—There is a slight cold stage, which quickly passes into the hot stage, in which the temperature mounts as high as in the hot stage of intermittent; the duration of the hot stage is from six to twelve hours. There is severe vomiting, often of blood. The tongue is parched, and there are intense nervous symptoms; headache is apt to be most severe and constant, and sometimes there are delirium and coma. A brief sweating stage follows the hot stage, with partial defervescence of all symptoms.

The attacks occur each mid-day for from five to fourteen days, the remission appearing in the mornings.

So called "bilious" symptoms are predominant in this fever, the skin and eyeballs becoming jaundiced, the tongue being covered with a yellowish pasty and tenacious coating, the breath offensive, with bleeding from the nose, herpetic eruptions upon the lips, a scanty excretion of yellowish brown urine, and constipation of the bowels.

Favourable Signs. — The favourable signs are the occurrence of a more marked and longer remission, with lower temperature throughout the day, and general amelioration of the above-mentioned symptoms. When the reverse happens the case is very grave.

Under the latter circumstances its similarity to yellow fever is so great, that there is very little to distinguish the two, unless it be that quinine relieves remittent but does not even palliate yellow fever.

Treatment.—The treatment appropriate to Remittent Fever is similar to that already suggested for Intermittent Fever, but prominence must be given those remedies which stimulate biliary and glandular secretions.

Mercurials—(**"Livingstone's Rousers."**)—Calomel is chief among these, and must be given, either in form of

"Livingstone's Rousers" (six grains each of Jalap and Rhubarb, with four grains of Calomel, and the same quantity of Quinine), or two of the Comp. Cathartic Tabloids, with one Tabloid (five grains) of Quinine as a substitute "when lethargic and other premonitions appear." If copious brownish stools do not appear within five hours, a full enema (of three or four syringefuls) of warm water, containing two teaspoonfuls of Epsom Salts, may be thrown into the rectum, and retained as long as possible to assist the cathartic.

Palliatives.—Palliatives as described for intermittent fever (p. 24) should be used.

Cooling Bath.—Should the Antipyrin be inadequate to reduce the temperature of the hot stage, and the fever attain 105° or 106°, the patient, if possible, and if a vigorous person, should be placed in a bath at 90° Fahr.,* which should be gradually cooled down to 15 degrees below the body's normal temperature (83°), and he should be kept in it for twenty minutes, or until the fever lowers to 101°. On the other hand, if he be very weak, or much reduced, the cool spongings already mentioned should be practised.

When the breathing is laboured, and the patient insensible, apply mustard leaves over the entire chest, and along the spine from the head downward, until the skin is highly reddened.

Remedies—Quinine.—The purge having acted, and the febrile temperature being lowered, the nausea and vomiting are usually mitigated, and four Quinine Tabloids (5 grs. each) may be given in black coffee, or with lemon-juice. If vomited, three of the Quinine Hypodermic Tabloids should be given.

A full dose of quinine by mouth, or half the dose by the skin may be repeated in grave cases. the former twice in six hours, the latter four times, without reference to remissions. It is well to remark here that "buzzing in the ears," or "fulness of the head," is no criterion of the effect of this all-important remedy. These effects must be absolutely disregarded, and the medicine continued till the fever is overcome, and its recurrences brought to an end.

Warburg's Tincture.—It has been found by that "Warburg's Tincture" (a solution of quinine aromatics) is very efficient in breaking up remittent

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* for such tests!

It is given in a table-spoonful dose after a purge, and during the remission, and repeated in three hours, with the same precautions as to exposure and chill after sweating occurs, as in the case of quinine. It must never be forgotten that ample support by proper and well-prepared food must attend upon all the measures previously described.

.—The patient, after repeated attacks of intermittent fever, or a prolonged remittent, especially if he be continuously subjected to the same environment, will often experience " sequelæ," or complications that demand attention.

These are accompanied by an impoverishment of the blood, shewn by pallor and a peculiar sallowness, loss of appetite and flesh, weakness of all the functional processes, and great prostration of strength.

Neuralgias of the head and face, or back and thighs, are common, and enlargements of the liver and spleen are not unfrequent.

Treatment—The most useful tonic under these circumstances is a combination of Quinine, Arsenic and Strychnine, one tabloid being taken, after food, three times a day for two or three weeks.

Caffein.—When the neuralgias are periodic, much relief may be obtained from the use of from two to four Tabloids of Caffein taken every two hours till the pain ceases. The remedy is more effectual if taken into the arm, hypodermically, in doses of two tabloids, dissolved as described (*See* Introductory chapter).

Morphine and Atropin.—Failing with caffein, a hypodermic injection of one Tabloid of Morphine 1/8 gr., and Atropin 1/100 gr, will probably be successful. In sciatica (neuralgia of the outside of thigh) the needle may be inserted deeply over the nerve, with usual precautions. (*See* introductory chapter.)

This latter injection should not be repeated, without skilled advice, oftener than once in two or three hours, and never unless for severe pain. After the injection the patient must keep perfectly quiet, or untoward symptoms may appear.

During the whole course of such neuralgias, the tonics just mentioned are most desirable, since they promote the nutritive processes, but their usefulness is largely dependent upon the amount of good food received into the system.

"Pain is the prayer of a nerve for healthy blood," said Romberg; or, as Anstie has it, "It is the cry of hungry nerves."

If after a course of tonics combined with arsenic, the eyelids become swollen and puffy, the eyes bloodshot, and the tongue covered with a milky white deposit, the arsenic should be omitted. It may be renewed after an interval of ten days.

Dropsy—Signs of Insufficient Action of Kidneys.—When the kidneys have been much deranged during remittent fever, shown by scant excretion or suppression of urine, or an appearance of blood with it, disease of these organs may continue, and prove a serious obstacle to recovery. In this case the region of the kidneys will probably be tender upon pressure, and the face unnaturally swollen in the morning, while the feet will be most so at night, when the force of gravity has during the day operated to favour the descent of fluids effused within the tissues.

Here an exclusive peptonised milk diet is essential; woollen garments next the skin must be rigidly adhered to, and every precaution taken against chill.

Caffein as a Diuretic.—A Tabloid of Caffein ½ gr. once in four hours will increase the quantity of urine passed.

Lemonade.—Lemonade holding in suspension a teaspoonful of pure powdered cream of tartar to the tumbler of water is of service in the same direction. It may be taken three or four times a day, unless it relax the bowels too much, when the dose should be lessened.

Chronicity.—Weeks and months may elapse before the impaired condition of the kidneys is overcome, and only the most prudent can hope to regain perfect health.

Hepatic and Splenic Enlargement.—When enlargement of the liver or spleen has arisen, the tonics (Quinine, Arsenic and Strychnine Tabloids, or Quinine Tabloids) should be taken, and application made of the Red Iodide of Mercury, 13 grains to the ounce of lard or Lanoline, with thorough friction over the enlargement, either before a good fire, or taking care that the parts be afterwards exposed to the sun's rays. A portion as large as a walnut may be rubbed in twice in one day, and repeated after a fortnight's interval, with the best effects (Maclean).

These cachectic states are all indicative of the propriety or even necessity for a return to healthier climates in order to effect a restoration of health.

TYPHOID FEVER.

This is supposed to be due to a germ, conveyed through water from closets, cesspools, or drains. It is not contagious, and is not usual in infants or the aged. It inflames the glands in the intestinal wall, and these ulcerate. The ulceration may extend till the bowel is perforated. The spleen is increased in size, and the mesenteric glands enlarged. This fever generally lasts from three to four weeks, and, in bad cases, even longer. Incubation—ten to twenty days.

In tropical climates, typhoid fever rarely occurs except in populous districts.

Symptoms.—It is insidious, and the first symptoms are dyspepsia, sleeplessness, languor, *dull pain of the head*, often succeeded by slight delirium at nights, loss of appetite, thirst, nose-bleeding and diarrhœa. At first (for three or four days) the patient often does not feel sufficiently ill to take to his bed. Great feebleness comes on; the mind is dull and the face pale, but the cheeks have a bright, circumscribed flush. The tongue is at first coated with a thin fur of whitish color that does not extend to the tip or edges, which are red. It is small, pointed, *moist*, and tremulous. There is commonly diarrhœa, with pale ochre or drab-coloured evacuations of offensive odour and alkaline reaction. The abdomen is slightly swollen, with tenderness and gurgling on pressure above the right groin. A rash appears about the seventh day on the chest and abdomen. There may be as few as four or five spots; these are rose-coloured and lenticular, last three days, and are followed by others; they disappear for a moment after gentle pressure with the finger.

In the *second week* the face is flushed, the tongue becomes dry, cracked, and brown, and trembles when protruded. It may peel in the centre, leaving a shiny red streak which resembles raw beef steak. The pulse varies with the febrile heat between 100 and 120 in ordinary cases. The temperature is probably above 103° Fahr. There are some cough and expectoration, and the patient lies mostly on the

delirium may also

The dangers which are to be most apprehended lie in the direction of nervous exhaustion from long continued high body temperature and its consequences, and upon ulceration of the inflamed patches, perforation of the bowel and hæmorrhages therefrom.

The *third* is the bad week, and the time of most danger. The patient lies exhausted upon his back. The tongue is hard and dry, and often covered with a brownish, dark, thick coating which may extend over the teeth like a skin and on to the lips. Delirium and stupor may supervene, the bowels and bladder acting involuntarily. Sometimes the urine must be drawn with a catheter. It is a bad omen to see the patient sink down toward the lower part of the bed.

The skin is for the most part dry, even at night when the temperature is descending, until the third or fourth week.

About the commencement of the *fourth week* in favourable cases sweating begins, the range of the mercury subsides day by day, the pulse falls in due proportion, the tongue becomes less glazed or more moist, and the mental powers recover their equilibrium.

The *fifth week* sees convalescence established, but relapses are frequent, and not uncommonly fatal.

Many variations from this typical order of symptoms occur, dependent upon the constitutional vigour of the patient, the condition of the inflamed intestinal tissues, and the degree of care exercised in diet and general nursing.

Range of Heat.—The temperature affords the most conclusive early evidence of the presence of disease. The successive morning temperatures show a gradual daily increase of a fraction of a degree, but the afternoon temperature of each day is over a degree higher than that of the morning. "The opportunity of watching this gradual rise is often wanting; but if, on the third or fourth day of an illness, without obvious local cause we find a temperature of 103° or 104° Fah., and especially if the evening rise and morning fall are marked, the probabilities are that the case is one of typhoid fever. At the end of the first week the temperature will have reached the level, which in that particular case will be maintained in the absence of complications throughout the dominant stage of the disease—103°, 104° or 105° Fah. in the evening, 1° or 1½° Fah. lower in the morning. In mild cases it may not be more than 102° when highest." (*Quain's Dict.*) *See* Appendix for chart of temperatures in typhoid fever.

The Typhoid State.—There is what is known in medicine as the "typhoid state," a condition of the most extreme depression of mind and body, with irritable bowels, in which the patient sinks down toward the lower part of the bed, passes the fæces involuntarily, etc. The "typhoid state" is not typhoid fever, but may occur in it, or be produced by long continued and unmanageable malarial fever, pneumonia, etc. The thermometer is the best guide for differentiating the "typhoid state" from typhoid fever. Those in the typhoid state are seldom known to recover.

Dangers.—Ulceration of the intestines is very insidious, and perforation at, or hæmorrhage from, a single point, when the general surface is doing well, may speedily end the scene.

Treatment—CAUTION.—The principal differences to be observed between the treatment of this and of the fevers that have already been described, are—first, that purgatives here are seldom admissible for evident reasons; and, second, that quinine is not a specific, since the fever cannot be "broken up," being independent of malarial causes. The patient must go to bed at once, and be kept absolutely quiet.

A careful study of the thermometer's range (*See* Appendix for chart), will generally shew an absence of cold, hot, and sweating stages which at the onset always indicate malarial fevers. The rapidity of succession will be absent, even if the order of symptoms be apparently present, for there are rare instances where an immediate diagnosis is difficult.

Laxative.—When doubt exists the question of purgation must not be hurriedly decided. But if constipation has been a precedent state, a small dose of castor oil, or a single "Laxative" may be taken to unload the bowel of matters that might prove irritating; after this—which may be assisted, if necessary, by warm and slightly salted enemata—it is best to confine one's self to the use of the latter, if the bowels do not spontaneously move every 48 hours.

Febrifuges.—During the first three weeks, should the afternoon temperature exceed 103°, Antipyrin, three or four Tabloids (5 grs. each), may be given about 10 or 11 o'clock every morning, and a second dose of half the quantity administered two hours afterwards, if the first have had no effect.

If the temperature fall rapidly after the larger dose to near the norme (98½°), and nausea or vomiting occur, two or three Tabloids only should be administered on subsequent occasions. Sometimes one dose lowers the temperature for a couple of days.

Caution.—The lowering of vitality is usually so great by the end of the third week, that a continuance of "febrifuges" may become a doubtful procedure, and it is well to substitute frequent spongings of the surface under a blanket, with cool water, once every hour during the height of fever.

Restlessness—Delirium.—If there be great restlessness, complaint of headache and pain, with or without delirium at times, one or two Tabloids of Chloral (5 grs. each) may be given. While a second dose is allowable, it is *not advisable* unless the symptoms are urgent.

This remedy often conduces to a quiet night.

Diarrhœa.—Upon the first appearances of diarrhœa, with or without abdominal distension and tenderness, "rectified" turpentine, in 5 or 10 drop doses, on dry or moist sugar, or mixed with a teaspoonful of glycerine, should be given three or four times in 24 hours.

If a good result do not immediately follow, simultaneous doses of one or two "Dover's" Tabloids (5 grs.), may be given, according to their effect upon the action of the bowels. With this addition, turpentine does not often occasion irritation at the neck of the bladder, but if this occur, the dose must be lessened or omitted altogether for a day. Flannel cloths wrung out of warm water and placed over the bladder are here needed. If the bowels move more than four times a day, the "Dover's" Tabloids, or Lead and Opium Tabloids, will be *specially indicated* in occasional doses.

Paralysis of Bladder—Catheterization.—There is sometimes paralysis of the bladder during the height of Typhoid Fever, and whether retention of urine thus result, or happen as the effect of Turpentine, it will be necessary to relieve the organ by passing a flexible catheter * at least twice a day. Turpentine should not be finally omitted until convalescence is well established, and a single dose, once a day, for two weeks thereafter, will be a prudent measure.

---

* This should be warmed in hot water, then well oiled, and slowly into the bladder, its entrance being known by the flow of urine.

Hæmorrhage—Tannin.—If hæmorrhage should occur (and the least solid food, or over-exertion of the patient, is apt to induce it, in spite of preventive measures), flannels wrung out in cold water (iced, if possible,) must be kept constantly applied to the abdominal surface, and two Tabloids of Tannin (5 grs. each) administered every hour or two till it ceases. Hazeline should be given in teaspoonful doses internally; ice in flannel placed over the right groin, and small pieces plunged in tepid water and then crowded into the rectum, are efficient measures. The Lead and Opium Tabloids are valuable.

Quinine.—Quinine is of little value, though sometimes given as a tonic in doses of two grains, every four or six hours, when great prostration is imminent. When the fever is very high, a dose of six 5 gr. Quinine Tabloids will reduce the temperature for many hours. In the beginning where there is doubt about the fever being typhoid quinine should be given.

Food.—In this fever, the management and supply of nourishment are of the utmost importance. Because of the absence of active saliva, of the imperfect secretion of gastric and other digestive juices, of the consequent weak digestion, imperfect assimilation, and the injured intestine, all food must be given in limited quantities and often, in fluid form, and already predigested whenever practicable. The blandest and least irritating articles must be selected, peptonized milk standing *par excellence* first upon the list.

Beef, mutton, chicken or veal broths, strained absolutely free from solid pieces, may be given, each portion with a single Peptonic Tablet dissolved in it, in half tea-cupful quantities (or less if necessary), every two or three hours. Kepler Malt Extract, with peptonised milk, is good food.

Beverages.—For drinks, barley or toast-water, or a "coffee" made with roasted grains of rice, and weak ginger tea, will answer best; while boiled water, cooled, may be given in reasonable allowance.

The white of eggs, stirred (not beaten) in water, with a little port wine and sugar, is often palatable and certainly

The yolk of eggs, boiled half-an-hour, separated from the white, pulverized, salted slightly, and stirred into peptonized milk, may be acceptable in convalescent stages.

CAUTIONS.—All solid food must be scrupulously withheld until convalescence be well established—speaking broadly, till three weeks after all febrile disorder has disappeared, and the passages become perfectly normal. As long as the lenticular rose-rash continues or reappears, there is still ulceration of the bowels, and solid foods must not be allowed. Trivial pimples and watery vesicles must not be mistaken for this, and the patient starved.

Where hæmorrhages have occurred this period must be yet more extended for perfect safety.

No fruits, jams, or coarse grains of any kind are allowable in this disease at any time, but weak lemonade or orange-water strained, may be allowed for the kidneys' sake, if found, by careful trial, to agree.

Alcohol.—In the later stages of typhoid fever, or in pulmonary complications, weak milk punch, or thinned "egg-nog" may prove useful in tiding the patient over a critical period (pale ale is a favourite stimulant with many physicians). Stimulants are indicated when the pulse has become thready and weak, ranging from 125 to 130 or more beats per minute, and the amount of alcoholic liquors contained in them may be in a three-quarter ratio, if other signs of sinking be present. If not possible to administer by mouth, the method by hypodermic injection may be adopted, and suspended when the pulse has become fuller and stronger, and less frequent.

In general, no matter how disinclined the patient may be, food must be given with all the regularity and precision appertaining to medicine, or he may lose more than half his chances of recovery.

Nutrient Enemata.—When swallowing is no longer possible, warm peptonized milk or the several meat broths made thin and peptonized with Fairchild's Zymine may be given in enemata, and repeated once in 3 hours.

Temperature of Room.—The temperature of the apartment should be about 64°F., and if possible a window in an adjoining room should be kept open. Avoid draughts. The excreta should be disinfected.

CHAPTER V.

SUNSTROKE.

There are two morbid conditions dependent upon exposure to extreme heat (not necessarily to the direct rays of the sun), which are liable to be confounded, and as they demand treatment of opposite kinds, it is quite necessary to gain a clear knowledge of their distinctive characteristics.

Heat Exhaustion.—The most common of these is known as heat exhaustion, and it attends upon fatiguing labour under conditions of extreme heat and a sultry humid atmosphere.

It is essentially dependent upon a lack of blood in the brain (as in a "faint.") The subject of it becomes weak, dizzy, and often nauseated, stumbles, falls, and is at once unconscious, with pale face, moist skin, feeble slow pulse, and slow, sighing, interrupted respiration. The thermometer shows a temperature at or just below norme (98½°).

Treatment.—Removal to the shade, a strictly recumbent posture, the administration of whiskey or wine, or black coffee in small quantities by the mouth if the patient can swallow, or diluted two thirds and thrown into the rectum by syringe, will accomplish restoration in a short time. The hypodermic injection of half to one teaspoonful of whiskey and water, equal parts, once in fifteen minutes till the patient is able to swallow, may prove more convenient.

CAUTION.—Cold applications to head or spine are here quite inadmissible.

Heat Fever.—The second condition commonly and more properly included under the term "Sunstroke," is called Heat Fever. This state depends upon brain congestion and disorganization of the blood.

Headache, dizziness, nausea, and unconsciousness occur here also, and with more or less rapidity of succession. The face is flushed, the eyes are bloodshot, the pulse is quick and bounding, the skin hot and dry, and the temperature from 105° to 110° [illegible]

Treatment.—Our first endeavour must be directed to the reduction of the body heat. The patient should be moved to the coolest accessible place, the head elevated, and when undressed the whole body is to be douched with cool water, or enveloped in a sheet; it may be wetted constantly and free evaporation allowed. If ice be within reach, this may be rubbed upon the spine and head. Cold water is sometimes injected into the rectum, once in ten or fifteen minutes.

CAUTION.—Great care must be taken not to reduce the temperature in the armpit below 100°, as depression is sometimes sudden and extreme. If the pulse become less hard, and rapidly reduced in frequency below 90, it would then be well to give teaspoonful quantities of whiskey by mouth; or, if impossible, half a teaspoonful of whiskey and water (equal parts) by hypodermic syringe once in ten or fifteen minutes, till depression is warded off, the cold applications having been withdrawn.

Convulsions.—Should convulsions occur and be continuous, Morphine should be given hypodermically, two Tabloids, 1/8 gr. each, being dissolved in a syringeful of water for the first injection (for a robust adult), and the effect carefully watched. If, in twenty minutes, the spasms be relieved, and the skin more moist with reduced temperature, no more need be given, but if no visible effect be noted, an injection of one Tabloid 1/8 grain (half the first dose), may be given half-an-hour after the first, when the remedy should be abandoned unless under skilled advice.

"Recovery is frequently complete, but sometimes tedious, and in many cases imperfect, ending in serious impairment of health and intellect" (Fayrer).

A permanent removal to a temperate climate is indispensable.

Danger to Drinkers.—Persons addicted to alcoholic drinks are specially liable to Heat Fever, and in such the disease is apt to prove fatal.

It is well to remember that serious errors of judgment may occur when persons are found in an unconscious state, and no knowledge of their antecedents can be had.

Alcoholic insensibility disappears slowly, and the temperature is usually below 98½°. The diagnosis between drunkeness and the stupor of opium, or the coma of apoplexy, is however sometimes difficult, and not within our present scope.

CHAPTER VI.

RESULTS OF EXPOSURE.

It may be possible that exposure to cold and wet, in some individuals susceptable to these, may engender painful conditions of the muscles akin to rheumatism. These, whether accompanied by slight fever (100° to 101°) or not, usually yield readily to Quinine, or the Salicylate of Soda and Quinine separately, in five grain doses (one Tabloid) every three or four hours.

If fever be a prominent symptom, and any of the joints be swollen, it would be best to commence with ten grains of the Salicylate of Soda (two Tabloids of 5 grs. each), taken every three or four hours till fever and swelling have disappeared entirely, when, if pain or stiffness of muscles remain, the Quinine will complete the cure.

Where fever runs high (103° to 104°) and is continuous through day and night, accompanied with muscular pain and joint swelling, Antipyrin in single doses of 15 grains (three Tabloids, 5 grs. each), may make a decided impression, to be followed by the Salicylate of Soda if a lower degree of fever supervene, or the preparation of quinine mentioned, if fever disappear. This remedy (Salicylate of Soda) will need to be continued two or three times daily for several days after subsidence of symptoms, unless the Quinine be substituted for it on account of progressive debility.

Sore throat, with more or less swelling of the tonsils, and consequent difficulty of swallowing, sometimes forms a disagreeable result of exposure.

It is simply and effectively treated by dissolving in the mouth one or two Tabloids of Chlorate of Potash with Borax every hour or two. If there be cough and soreness of the chest, the Potash and Borax may be alternated with Tabloids of Ammonium Chloride, 5 grs. each. A dose of calomel is one of the best means of reducing an inflamed tonsil.

a continuous fever is conjoined with the latter
should seek a perfectly equable

in bed, seeking to induce free action of the skin by artificial warmth if necessary, and by Pilocarpine, one Tabloid 1/10 gr., once in three hours, or two Tabloids of Antipyrin (5 grs. each) once in four to six hours, till the temperature is normal.

Catarrhal symptoms often outlast the febrile, and may be treated by alternate doses of the Tabloids of Ammonium Chloride, and Tabloids Potash Chlorate with Borax, every hour or two.

Neuralgia and sciatica, which may follow exposures, may be treated as when attending on debility after fevers. (Pages 28 & 29).

CHAPTER VII.

SNAKE BITES.

• **Venomous Snakes — Non-Venomous.**—In general terms the bite of venomous serpents may be known by the marks of two well defined punctures, which attest the insertion of fangs (Fayrer). Innocent snakes have a double row of teeth of nearly equal size, though this rule is subject to a few exceptions.

Treatment—Ligature.—The *first* effort should be to prevent the entry of the poison into the circulation by applying two bandages tightly around the bitten limb, one above the seat of puncture and the other below. Cut out the bitten part, or if this cannot be done, freely scarify it with a knife or lancet.

Hypodermic Injections.—*Secondly*, the virus may sometimes be neutralized by injecting immediately and deeply into the wounds, or the tissues about them, some disorganising fluid. Press a tabloid of Potash Permanganate into the wound, and inject a strong solution (made by dissolving a tabloid in half-a-teaspoonful of water) in four or five places all round, and about 1-in. from the centre of the bite. Some pain and much irritation must be expected from this. The syringe must be carefully washed and cleansed after such

Stimulants.—Stimulants should *not* be given except as a last resource. If given at first they simply encourage death by aiding the circulation to disseminate the poison throughout the system.

Nutritive broths, strong tea and coffee, may be given in small but oft-repeated portions.

Insect bites.—The poisonous bites of insects may be best treated by a solution of Carbonate of Ammonium, two tabloids, dissolved in a tablespoonful of water, applied with a small pledget of absorbent cotton continuously.

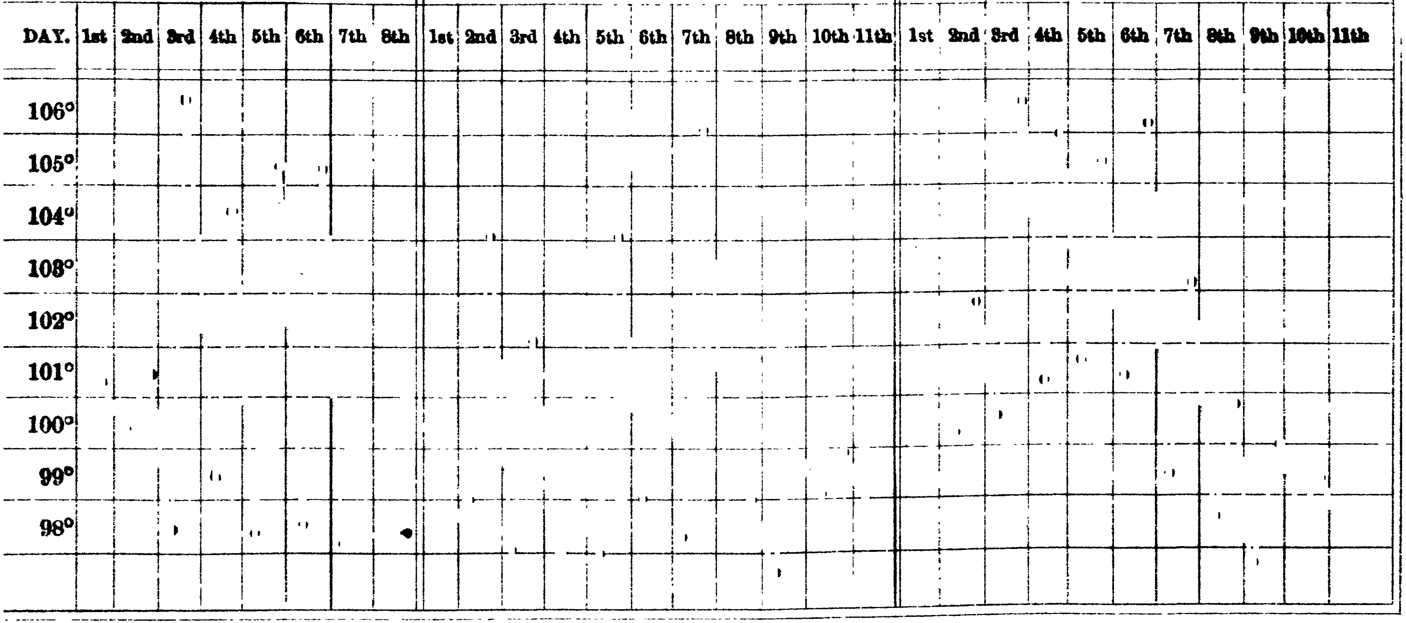
The resultant suppurative surfaces may be dressed with cotton saturated with Eucalyptine until cicatrized.

As a preventive of mosquito bites, the combination of oil of pennyroyal (Ol. Hedeomæ pulegioidis) and menthol, each one part, pulverised camphor two parts, and Lanoline twelve parts, smeared upon exposed surfaces, will be found effective. This ointment also relieves the itching consequent to being bitten.

A.
Record of Temperatures (Highest and Lowest Daily), in a quotidian **INTERMITTENT**. (After Wunderlich.)

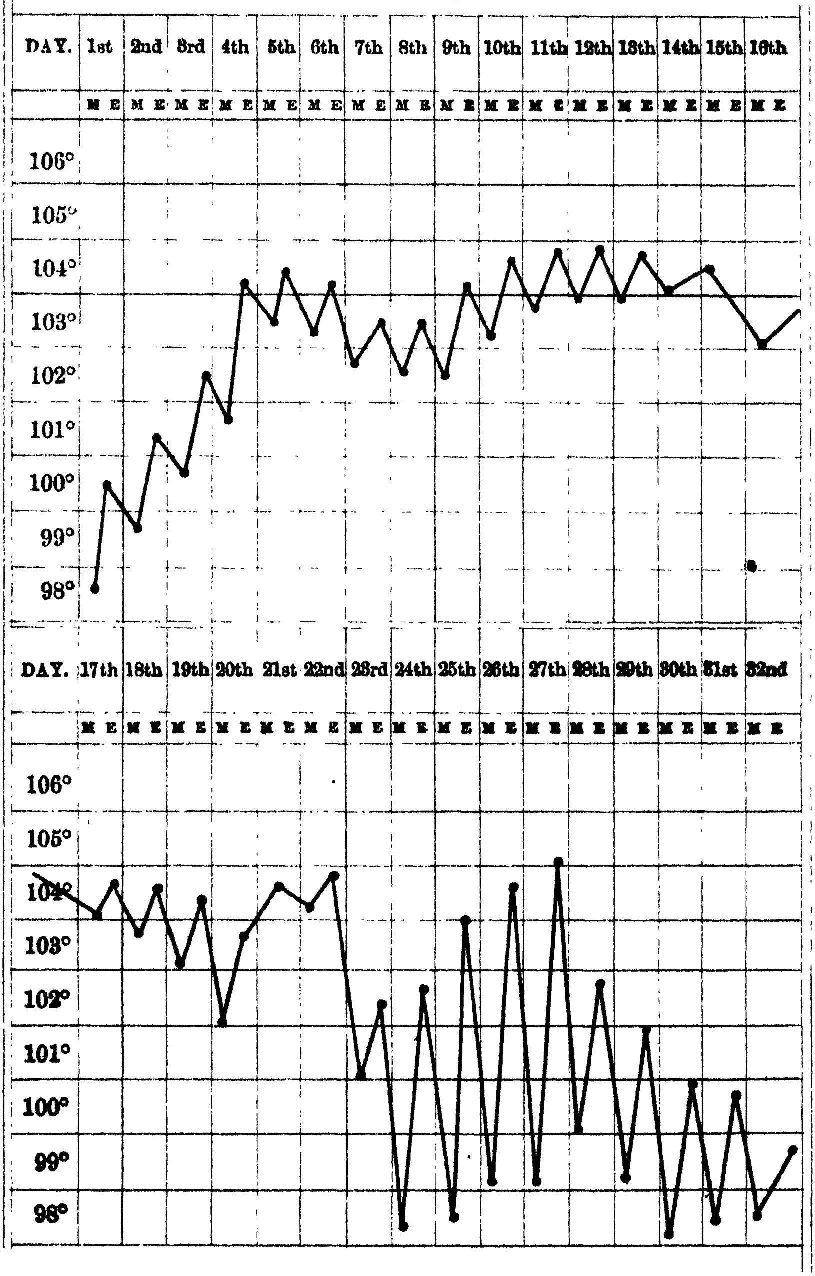
B.
Temperatures (Highest and Lowest Daily), in an **INTERMITTENT** of Tertian type.—(Wunderlich.)

C.
Temperatures (Highest and Lowest Daily), in **REMITTENT** Fever.



D.

Typical Temperatures in TYPHOID FEVER, taken Morning and Evening.—(Wunderlich & Traube.)



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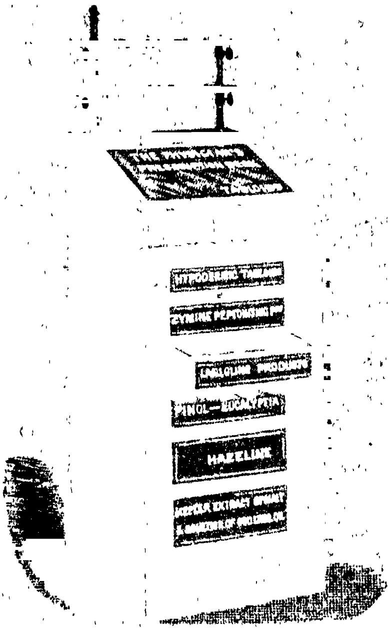

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SURGICAL NOTES.

CONTENTS.

CHAPTER I.

BRUISES, WOUNDS, HÆMORRHAGE 45

CHAPTER II.

FRACTURES 58

CHAPTER III.

DISLOCATIONS, SPRAINS, BURNS AND SCALDS, FROST BITE, DROWNING 73

CHAPTER IV.

INJURIES AND DISEASES OF THE EYE, HERNIA, RETENTION OF URINE, ABSCESS 82

CHAPTER V.

AMPUTATIONS, ANÆSTHETICS . . . 92

SURGICAL NOTES.

CHAPTER I.

BRUISES—WOUNDS—HÆMORRHAGE.

BRUISES.

These are caused by blows or squeezes which tear the internal tissues, especially the smallest blood-vessels, and occasionally larger ones; the result being that blood is poured out into, and beneath the skin, and sometimes into the deeper structures.

The symptoms are pain, swelling, and dark discolouration; in slight cases the latter may be absent, and in all cases its amount and rapidity of appearance depend greatly upon the situation of the injury; thus, if the injured tissues are loose, as about the eyes and limbs, the discolouration is great, and appears rapidly; but if the tissues are firm, as on the scalp, it is little, and takes some time to appear. As repair takes place by re-absorption of the poured-out blood, the discolouration becomes violet-coloured, and gradually changes to olive-brown, green and yellow, and lastly disappears.

The amount of damage done varies with the severity of the injury; in mild cases there are but little swelling and discolouration; in moderately severe cases there is considerable discolouration, sometimes accompanied by blisters containing blood-stained fluid, and sometimes by a distinct collection of fluid blood beneath the skin; in the most severe cases there may be mortification of the skin and injured tissues.

organs—*e.g.*, brain, lungs, liver, stomach, and bowels—may suffer in a similar way, producing a variety of symptoms; thus, in concussion of the brain, or "stun," there are fainting, complete or partial insensibility, by vomiting and restlessness; in injuries of the lungs, are blood-spitting and faintness; in injuries of the liver, stomach, or bowels there are great pain, paleness of face, fainting, and sometimes sudden death.

The *treatment* should always be of the simplest kind. Mild bruises require no attention. Moderately severe bruises should be covered with dry cotton-wool, kept in place with a bandage. When there is much pain, a warm—not hot—fomentation or poultice, sprinkled with laudanum, should be applied. Blisters should be pricked and dressed with vaseline or oil, upon lint. The injured part must be kept at rest until the pain and swelling have disappeared. When there is a distinct collection of blood, moderate pressure with a bandage should be used, and as re-absorption is slow in such cases, considerable patience is required. When there is mortification of the skin, poultices should be applied until the destroyed tissue separates, when a water dressing, or an ointment, such as zinc or boric, may be used. When there is concussion of the brain the patient should be placed on his back with his head slightly raised, and kept perfectly quiet; ice bags or cold water cloths should be applied to the head; when there is complete insensibility, with paleness, coldness, and a feeble pulse, warmth in the form of hot water-bottles or bags, or heated bricks or stones, should be applied to the body and limbs.

When internal organs have suffered, the patient must be kept absolutely at rest; when there is fainting, the head must be placed as low as possible and the ordinary restoratives administered; to allay vomiting, give ice to suck; to relieve pain, apply hot fomentations sprinkled with laudanum. Brandy or other stimulants should not be administered except in cases of extreme prostration.

WOUNDS.

These are divided into five varieties:—

1. *Incised.*—When the wound is "clean cut," and produced by a sharp-edged instrument. The symptoms smoothness of the edges, pain, bleeding and gaping of wound. An *apparently* clean-cut wound may be by a blow or a kick, especially when

2. *Punctured.*—When the depth of the wound is much greater than its breadth, and is produced by a sharp-pointed instrument.

3. *Lacerated.*—When the wound is torn and jagged. Such a wound does not as a rule gape much, and usually the bleeding is slight, but often there is a tendency to mortification of the edges.

4. *Contused.*—When the wound is produced by a blow, and its edges are bruised.

5. *Gun-shot.*—When the wound is produced by a bullet, small shot, or the bursting of a gun. Such wounds may present any variety of punctured, lacerated, and contused wounds, the peculiarity depending upon the shape, size, and velocity of the missile. There is usually less bleeding than in other wounds; and the injury may be complicated by the lodgement of balls, shot, pieces of clothing or wadding. When a bullet passes completely through any part of the body, the aperture of entrance is usually small with the edges turned in, while the aperture of exit is larger and more irregular, with the edges turned out; a single bullet is capable of producing two or more pairs of such openings. The injury produced by small shot varies with the distance at which the gun has been fired; if the distance be considerable, the pellets scatter, and only a few lodge here and there in the skin; but if the gun has been fired at a short range, the charge enters the body in a mass, and the pellets, by scattering in every direction, cause great laceration.

Wounds heal in two ways:—

1. *Quickly*, by what is called primary union or first intention, without suppuration and leaving a fine scar. This result should always be aimed at when possible; but when tissues have been completely torn out, or greatly torn or bruised, a speedy union cannot take place. Healing by primary union can only occur when the wound has been rendered perfectly clean, and subsequently kept so; when its surfaces have been brought accurately together, and are not separated by excessive blood-clot or other matter; and when it is kept at rest, and protected from injury.

2. *Slowly*, with suppuration, formation of granulations (or "proud flesh"), and leaving a large scar. This occurs when the edges of the wound are

part has not been kept at rest; and

has not been properly

Treatment.—1. Arrest bleeding. (See *Hæmorrhage.*)

2. Remove all dirt, blood-clot, and other matter, by washing and syringing out the wound with a solution of carbolic acid (one part of acid to twenty parts of water), or any other antiseptic. Bodies, such as pieces of glass, must be picked out with forceps. When appliances for the permanent arrest of hæmorrhage are not at hand, it is unwise to remove the blood-clot, because, by doing so, sharp bleeding may be brought on.

3. Bring the edges of the wound accurately together, and keep them in position with stitches (sutures) or by strips of plaster strapping. In small and badly lacerated wounds, especially those produced by glass, the plaster method is to be recommended. In applying plaster, care should be taken to leave sufficient space between the strips to allow the discharge of blood or pus to escape freely. In large wounds, where there is a fair chance of primary union, complete or partial, sutures of silver wire, silk, horsehair, or catgut should be used; they should be applied by the "interrupted method," which consists of a series of separate single stitches (see fig. 1). The needle should be introduced through the skin at one side of the wound, from without, and carried obliquely through the tissues till it passes out through the skin on the opposite side of the wound; the edges of the wound are then brought together, and the two ends of the stitch tied in a double reef-knot (see fig. 4), made on one side of the wound. When fastened, the stitch should be sufficiently tight to keep the edges in contact, but not tight enough to produce puckering of the skin. Punctured wounds should never be stitched nor strapped with plaster, but the surfaces of the wound pressed together with properly applied pads, held in position by a bandage.

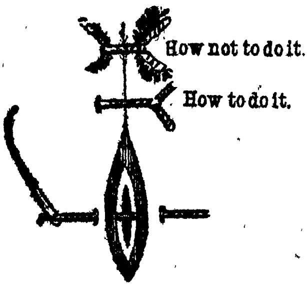


Fig.
Interrupted Suture.

4. Allow for free drainage, or the escape of blood and other discharges. In small wounds it is sufficient to leave the lower part slightly open; in larger wounds drainage may be secured by using indiarubber tubes, or skeins of catgut or horsehair, of which the indiarubber tube is the

best. If catgut or horsehair be used, the thickness of the skein must depend upon the size of the wound; and catgut must be kept moist or it will not act. In all cases care must be taken to have the outer end of the drain at the lowest and most dependent part of the wound.

5. The injured part must be kept at perfect rest by splints, pads, bandages, etc.

6. Putrefaction must be avoided by taking care that the wound and everything that comes in contact with it, including instruments and the hands of the operator, are perfectly clean, and, when necessary, disinfected with a solution of carbolic acid (one part of acid to forty of water).

Gun-shot wounds require the same general treatment laid down for other wounds. As a rule, however, no sutures should be inserted, especially in bullet-wounds—which are practically punctures,—or in small shot-wounds when there is extensive laceration. With regard to the extraction of bullets and shot, none should be removed save those that can easily be got at, or lie immediately beneath the skin. All pieces of clothing or wadding that can be seen should be at once removed. It is certain that indiscriminate extraction of shot and bullets frequently does far more harm than their presence, as when let alone they often become firmly embedded in the tissues, giving rise to no irritation whatever.

The Dressing applied to all recent wounds should be a dry one. After the edges of the wound have been brought together, some powdered iodoform, if any be at hand, should be dusted over the wound, a pad of dry lint applied along each side to press the surfaces together, and lastly, a piece of dry lint, or better, an absorbent wool-pad, retained by a bandage, should be placed over all.

The After-Treatment.—Most of the stitches should be removed by the fourth day, and all by the seventh. In large wounds, strips of plaster should be placed between the stitches before removing them.* If the wound and its surroundings become inflamed the greater number or all of the stitches should be at once removed, to allow the pent-up pus, which is probably causing the inflammation, to escape. Stitches which tend to cut their way out should also be at once removed. The drainage tube can generally be removed in from two to seven days; the time that it should remain in varies with the size of the wound and the amount of the discharge, but the sooner it can be removed with safety the better.

The dressing should be changed as seldom as possible. The chief reasons for changing a dressing are,—the appearance of discharge outside the dressing, feverishness, pain, and for the removal of stitches and drain. Should inflammation and suppuration occur, it will be necessary to apply a water-dressing, consisting of lint wrung out in warm water and covered with gutta-percha tissue. When the wound heals slowly and by granulation, an ointment dressing—*e.g.*, zinc, boric, or vaseline—is often very useful, especially after the inflammation has disappeared; the ointment should be spread upon lint, and cut to exactly the size of the raw surface.

HÆMORRHAGE OR BLEEDING.

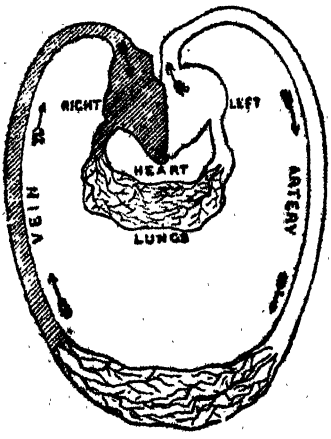
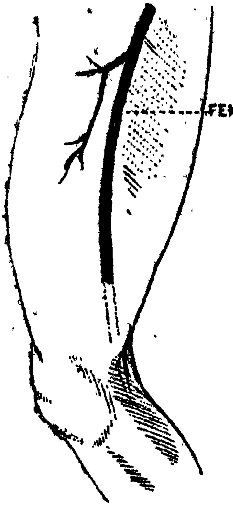


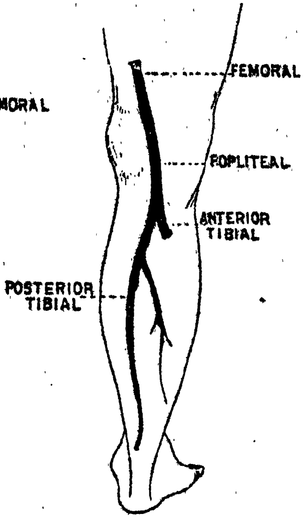
Fig. 2.

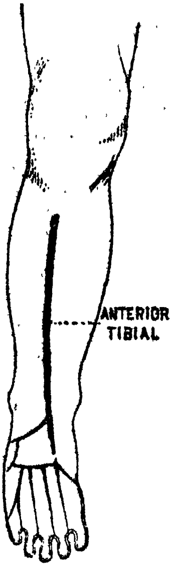
The centre of the circulation of the blood is the *heart*, which is a hollow muscular organ, situated in the left side of the chest, and consists of two chambers, the right and the left. The heart is continually contracting and dilating alternatively, and in this way pumps the blood into the arteries. The blood leaves the left chamber of the heart by a large tube called an *artery*, which divides again and again into smaller and smaller tubes, which pass to all parts of the body. The regular beat of the blood in these vessels is called the *pulse*, and is caused by the heart's contraction, sending the blood through the arteries in jerks, and by the elasticity and rhythmical action of the vessels. The arteries, getting smaller and smaller, at last end in numberless microscopic tubes called *capillaries*, which form a dense network in every part of the body. The capillaries eventually reunite, forming vessels called the *veins*, through which the blood returns to the right chamber of the heart. The blood in the veins has a steady flow, and is of purple colour, from the impurities it is removing from the body. From the right chamber of the heart the blood passes through an artery into a second series of capillaries in the lungs, which unite to form veins to convey it to the left chamber of the heart, to be again driven through the general circulation. In the lungs the blood takes up oxygen from the air, and gives off some of its impurities; the result being, that it becomes bright red instead of purple.

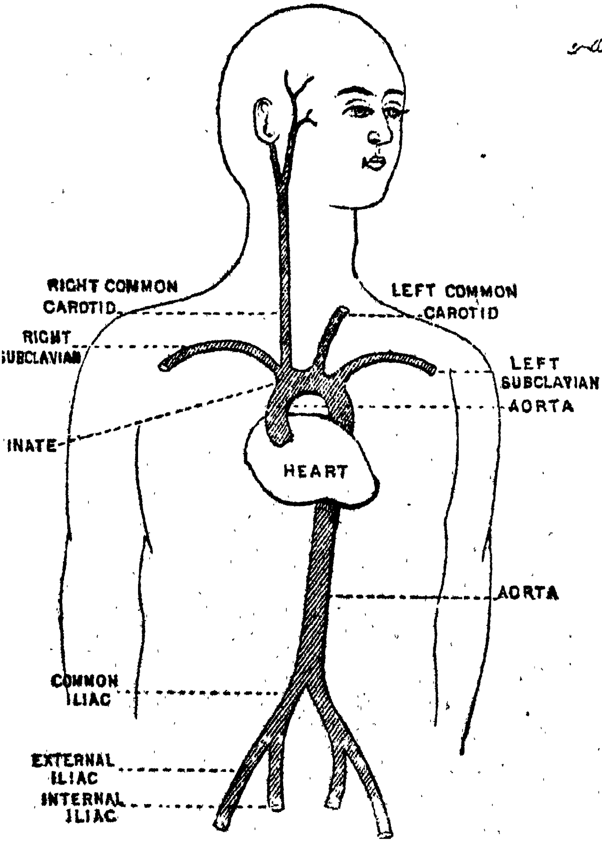
The main arteries of the body may be described as follows. Starting from the left side of the heart is the main artery, called the *aorta;* this firstly gives off three large branches, the *innominate*, the *left common carotid*, and *left subclavian;* the innominate dividing into the *right common carotid*, and the *right subclavian.* The two common carotids ascend the neck on either side the windpipe, giving branches to supply the head and face. Each of the subclavians lies upon the uppermost rib, and beneath the collar-bone of its own side of the body, and passes into the arm-pit, where it is called the *axillary* artery. From the arm-pit the artery is called the *brachial*, and runs down and round the inner side of the arm to the centre of the bend of the elbow, where it divides into two branches, which run down on either side of the front of the forearm to the wrist, where they sub-divide to supply numerous branches to the hand and fingers; the artery on the thumb side of the arm is called the *radial;* and the one on the little finger side, the *ulnar.*

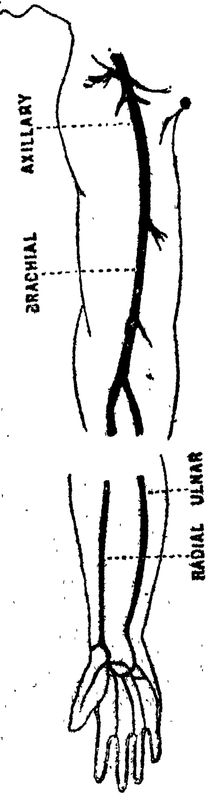
After the aorta has given off these branches to supply the head and arms, it arches over on to the left side to run down beside the spine to the abdomen, where it divides into the *right* and *left common iliac* arteries, each of which divides again into the *internal*, and *external* iliac arteries. The internal supplies the organs in the lower part of the abdomen; the external passes out of the abdomen at the centre of the groin, where it becomes the *femoral*—the large artery of the thigh. The femoral is firstly in front, but it gradually curves backward round the inner side of the thigh, and passes behind the knee-joint, where it is called the *popliteal.* Just below the knee, the popliteal divides into two branches; one running in front of the leg, called the *anterior tibial;* and one behind, called the *posterior tibial.* Below the ankle-joint both arteries divide freely to supply the foot and toes.


FEMORAL


FEMORAL
POPLITEAL
ANTERIOR TIBIAL
POSTERIOR TIBIAL


ANTERIOR TIBIAL


RIGHT COMMON CAROTID
RIGHT SUBCLAVIAN
INATE
LEFT COMMON CAROTID
LEFT SUBCLAVIAN
AORTA
HEART
AORTA
COMMON ILIAC
EXTERNAL ILIAC
INTERNAL ILIAC


AXILLARY
BRACHIAL
ULNAR
RADIAL

It can now be seen why every wound bleeds, and how the variety, quality, and danger of the bleeding depend upon the nature of the vessels cut; thus:—

1. If the blood flows gently from the whole of the cut surface of a wound, only the capillaries have been divided.

2. If dark purple blood flows in a steady stream from one or more places in a wound, a vein has been opened.

3. If bright red blood *spirts* out of the wound in jerks, an artery has been wounded.

When the bleeding is from capillaries and veins usually there is but little danger; but when a large or medium-sized artery has been opened, the risk, if the hæmorrhage be not stopped, is great.

TREATMENT

1. **From Arteries** (*Temporary*).—As all cases require prompt attention, the bleeding must be arrested temporarily, until appliances for permanent treatment can be obtained. In almost all cases, pressing with the fingers in the wound over the mouths of the divided vessels will be sufficient until further help can be obtained. If the bleeding be from a wound of the arms or legs, a folded handkerchief, necktie, or piece of strong cord should be *loosely* tied round the upper arm or thigh, as the case may be, on the heart side of the wound, a piece of stick, handle of knife, or key pushed under it, and twisted round and round till the bleeding stops. The wound should then be cleared of clotted blood, and tightly stuffed with strips of clean rag; lastly, a hard pad should be bound firmly over the wound and its stuffing, and the limb raised. The handkerchief and stick may now be loosened, but if the bleeding returns they must be tightened again, and the wound stuffed still tighter.

Should the wound be so near the body that the handkerchief and stick cannot be applied, a roll of handkerchief should be firmly pressed on the bleeding point, or the fingers may be used instead. In all cases the limb should be raised. Bleeding from wounds of the head can always be stopped by binding a pad firmly over the wound with a folded handkerchief or bandage.

Wounds of the body seldom bleed much, and the usual pad and bandage are generally sufficient.

Bleeding from the large arteries of the neck (carotid) can only be temporarily stopped by pressing with the fingers at the lower part of the neck, just above the inner end of the collar-bone; or by pressing in the wound on the mouths of the divided vessel.

Permanent.—Place the patient in a good light, and have a basin of water and a sponge handy; then remove whatever may be tied round the wound, and, as quickly as possible, sponge away all clotted blood. Next, place a ligature around all arteries that can be seen to be divided, whether they are bleeding or not; this is done by seizing the open end of the vessel with artery forceps, drawing it slightly out from the surface of the wound, and tightly tying round it a catgut, or silk thread (ligature) in a *reef-knot.*

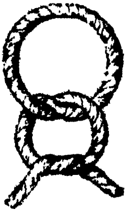


Fig. 4.
A Reef-knot.

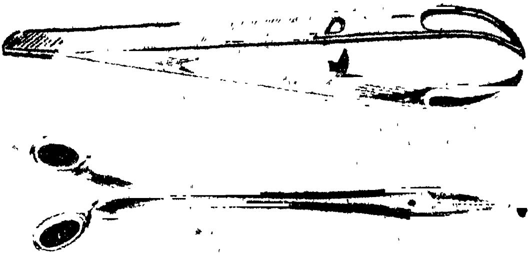


Fig. 5.
Varieties of Artery Forceps.

Artery forceps are of various kinds, but all are fitted with a spring or catch which holds the blades in position when released from the operator's hand. Catgut is the best ligature to use, as it is absorbed by the tissues, and its ends can consequently be cut off short. If silk be used the ends must be left long and hanging out at one end of the wound, for silk is not absorbed. When the bleeding artery retracts (into the tissues), or is so awkwardly situated in an angle or pocket of the wound that it cannot be got at with the forceps, the wound should be enlarged in the direction of the bleeding, until the bleeding point can be seen and ligatured. In scalp-wounds the arteries often retract into the tissues, but here, instead of enlarging the wound and searching for the vessel, the bleeding should be controlled by sewing up the edges, and bandaging a pad firmly over the wound.

Occasionally an artery may only be partially cut through, when it should be completely divided with a knife, and both ends ligatured.

When alarming bleeding rushes up from the bottom of the wound, from a main artery, the finger should be placed on the bleeding-point, while the vessel is being exposed above and below the bleeding-point with a knife, and two ligatures, one above and one below

it,

Should the wound be on one of the limbs, it is wise, before removing the temporary dressing, to control the bleeding, by placing a tourniquet on the heart-side of the wound.

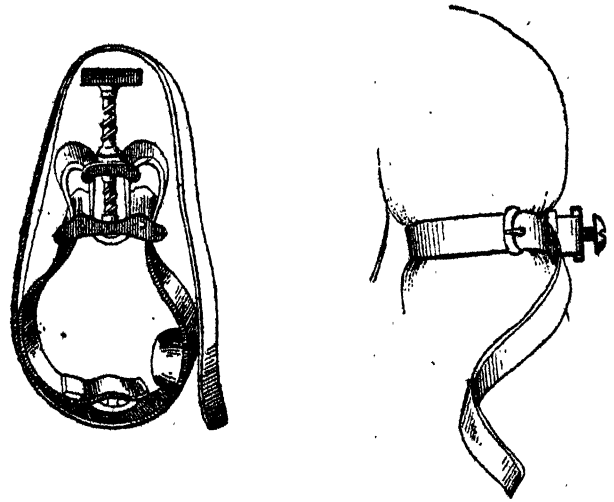


Fig. 6.
Petit's Tourniquet.

limbs. There are two kinds in ordinary

1. Petit's tourniquet, consisting of two metal plates, which be separated from one another by a screw. The plates are threaded in such a way, with a strong tape-strap, that when they are separated

stopped.

2. Esmarch's tourniquet, consisting of a strong elastic tube, fitted with a hook at one end and a chain at the other. In applying this instrument the tube should be quickly stretched

and wound round the limb, one end in one direction and one in the other, and finally fastened by placing the hook in one of the links of the chain. This tourniquet may be fitted with a clamp fastening, instead of the hook and chain.

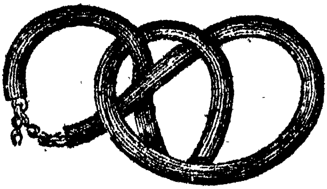


Fig. 7.
Esmarch's Tourniquet.

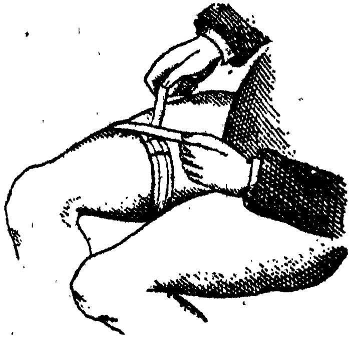


Fig. 8.
Esmarch Tourniquet with Clamp Fastening.

Petit's tourniquet is perhaps the more useful, as it can be tightened or slackened as required, without being removed from the limb. Whichever kind be used, it is absolutely necessary to apply it tight enough to compress the main artery of the part, because, if this be not done, there will still be free arterial hæmorrhage and increased venous bleeding.

After the bleeding has been stopped, the wound must be cleansed, sutured, and dressed; the injured part raised on a pillow, and kept at perfect rest.

The treatment of profuse arterial hæmorrhage from a punctured wound is often very difficult, owing to the smallness of the external wound, and the depth of the blood-vessel. In the first instance, pressure should be tried, by bandaging the whole limb, and then binding a hard conical pad firmly on the wound. If this fail, the wound must be enlarged, and the bleeding-point carefully sought for and when possible ligatured. If the bleeding have stopped of itself, the clot must be left alone and no pressure applied; the wound being simply dressed with a fold of lint, the part raised on a pillow, and kept absolutely quiet.

2. **From Veins.**—In most cases the bleeding stops of itself; should it not do so, the wound should be closed with sutures or plaster strapping, and a pad of lint firmly band-

aged over the part, the bandage being carried upwards from the fingers or toes. This method of treatment applies to a varicose vein that has given way. Occasionally large veins, such as those accompanying the main arteries of the limbs, require to be ligatured. In all troublesome cases the part should be raised, and pressure on the circulation on the heart-side of the wound, as garters, or tight clothing, should be removed.

3. **From Capillaries.**—This kind of bleeding can always be stopped by pressure, made by uniting the edges of the wound with sutures or plaster, and, when necessary, by bandaging a pad over it.

Bleeding from the nose is arrested by making the patient lie on his back, raising the arms above the head, applying cold water to the nose, syringing out the nostril with hot or cold water, and by firmly plugging the outer opening of the nostril with rag or lint. If the blood still continue to trickle copiously down the throat, the inner opening of the nostril should also be plugged, by passing a gum-elastic catheter, with its wire removed, straight backwards—not upwards—along the nostril; when its end can be seen or felt at the back of the throat it must be hooked forward with the finger, and brought out at the mouth. A strong piece of string, having a firm roll of lint tightly tied at its centre, should now be attached to the end of the catheter, and the roll of lint drawn by the catheter and string into the inner or throat-opening of the nostril, and firmly wedged

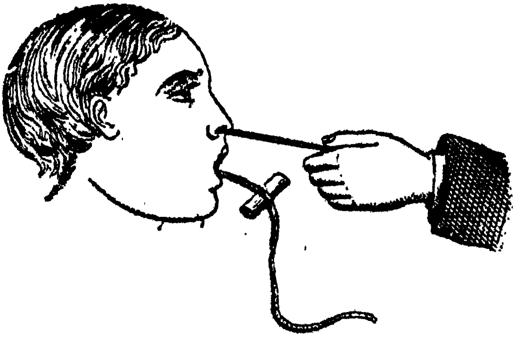


Fig. 9.
Plugging Nostril.

there The roll of lint should be about 2½ inches in length, and rather thinner than the little finger; but its size must vary with the size of the opening. Lastly, both ends of the string, one hanging from the nose and the other from the mouth, should be loosely knotted together, and the outer opening of the nostril firmly plugged. The inner plug may be removed in twenty-four hours' time, and, if necessary, reinserted.

CHAPTER II.

FRACTURES.

Broken bones exhibit two varieties; *simple*, where the bone is merely broken; and *compound*, where an external flesh wound communicates with the broken fragments. These varieties may be divided into: *complete*, when the bone is broken right through; *incomplete* (or greenstick), when it is only cracked and usually bent; *comminuted*, when it is broken in more than one place; and *impacted*, when one end of the broken bone is driven into, and firmly fixed in, the other fragment.

A fracture may be straight across a bone, when the broken ends will be blunt; or it may be oblique, when the broken ends will be sharp, and liable, if not kept straight and quiet, to work their way outwards through the muscles and skin, and so form a compound fracture. Sometimes a bone may be split lengthways.

The cause of a fracture is usually a fall or blow, and occasionally a violent contraction of the muscles.

The symptoms :—

1. *Swelling* and *pain on movement* are invariable symptoms, but they occur in so many other conditions that alone they are of little importance.

2. *Deformity* at the place of fracture is a common symptom, though occasionally absent; as, for example, when one of the two bones of the forearm or of the leg below the knee is broken, the sound bone acts as a splint, and prevents the displacement of the broken bone. In incomplete fractures there may be no displacement, but it is more usual to find the limb bent. In rare cases of simple fracture there is no

deformity. Deformity consists in an overlapping of one fragment on to the other, and often in bending and twisting of the parts, especially well seen in fractures about the wrist and ankle. The overlapping produces shortening of the bone, which is well marked in fractures of the thigh-bone.

3. *Inability to move the limb* always occurs to a certain extent; but when only one bone of the forearm or of the leg below the knee is broken, there is often a considerable amount of power of movement.

4. *Unusual movement at the fractured spot*, much resembling an extra joint in the limb, is found when there has been a complete fracture; but not when the fracture is incomplete or impacted, or when only one bone of the forearm or leg below the knee is broken.

5. *Crepitus* (or the grating of the fragments on one another) is the most reliable symptom of fracture; but it may be absent when the broken ends of the bone are separated by blood-clot, muscle, or other tissue, or when they are so widely separated that it is impossible to bring them into contact. In incomplete and impacted fractures it is always absent. It is often difficult to produce crepitus when one of two parallel bones, as those of the forearm or leg below the knee, are fractured, and in fractures of the skull, spine, and shoulder-blade. Crepitus is most easily produced by rotating the part from side to side; by placing a finger on each side of the fractured spot, and pressing alternately first with one and then with the other; or by gently moving the part in every direction. The fine crackling, produced by moving rheumatic joints or tendons, must not be mistaken for the crepitus of a broken bone.

6. *Irregularity felt by running a finger along the bone* is often an evident symptom; but it cannot be detected when there is much swelling, when the bone is deeply buried in the muscles, or when there is little or no displacement.

7. *The sensation of snapping when the bone breaks* is occasionally described by the patient; but other structures in giving way, cause a similar sensation, and occasionally a snap is said to have been felt when nothing has been broken.

In all cases of suspected fracture the part should be exposed and examined as soon as possible, as the swelling which appears rapidly is a great hindrance to arriving at a definite conclusion. The injured part should be always compared with the corresponding sound part on the opposite side of the body, thus any irregularity and deformity can be much more easily detected.

The healing of fractured bones takes place by the broken ends being joined together by new bone-tissue. This new substance is at first quite soft, but gradually it becomes impregnated with lime salts, until it forms solid bone. In favourable cases this process takes from two to eight weeks, according to the age of the patient and the size of the bone —the greater the age and the larger the bone, the longer the time before firm union occurs. If the bone have been kept quiet, and in its natural position, during the healing period, the broken ends will be so well united that hardly any appearance of the injury is left; but if perfect rest have not been maintained, nor the ends of the bone properly adjusted, there will be thickening, and sometimes crookedness, shortening, and perhaps no attempt at union at all.

Treatment.—The first care should be to prevent any further mischief being done. The patient must remain quiet while the preliminary arrangements are being made. The clothes covering the limb having been removed by cutting along the seams, the broken ends of the bone must be brought into their natural position, and extempore splints applied to keep them in place, as well as to prevent any movement or dangling of the injured part, which might cause the sharp ends to work their way outwards, and thus produce a compound fracture. As the splint material used should vary with the locality in which the accident has happened, ordinary common-sense is required to select the best. Such things as pieces of board, boxes, book-covers, thickly doubled-up newspaper, walking-sticks, umbrellas, branches or twigs of trees, pieces of fencing, bark, bundles of reeds or straw, rolled-up clothing, pillows, etc., may be looked for. The splints selected should, if hard, be padded with wool, tow, pieces of clothing, moss, or grass, and may be fixed in place with a bandage, folded handkerchiefs, neckties, garters, strong string, or strips of clothing. In all cases of fracture two splints should be applied, one on each side the limb; in the leg, the splints should be long enough to fix the joints on both sides the fracture, and the injured leg should be tied to the sound one; in the arm the joints are fixed by means of a sling. Lastly, the patient must be conveyed home; if the arm be broken he will probably be able to walk; but if the leg, he will have to be carefully carried on a stretcher, which may be extemporised out of a door, gate, hurdle, sack, or large buttoned-up coat with its sleeves turned inside out, and a pole passed through each of them.

When the patient arrives at the place where he is to be permanently attended to, he should be laid on a fairly narrow mattress with boards slipped in transversely beneath it at the foot end to keep it flat, and the fracture as soon as possible put up in suitable permanent splints.

In the treatment of fractures three points should be remembered, viz.: 1. The fragments should be put back into their natural position. 2. They should be retained in good position until they unite. 3. Various complications should be guarded against.

1. *The fragments are brought into their proper position* by pulling out the injured part to its full length, and then, by pressing the ends into place. The pulling is best done by an assistant, while the operator guides the broken ends. Sometimes it may be necessary to give chloroform or ether, to remove all resistance caused by the contraction of muscles, which otherwise must be overcome by considerable force.

2. *The broken ends must be retained in their proper position* by splints, pads, bandages, and other apparatus, as described under the individual fractures. If it be impossible from swelling, or any other cause, to arrive at a definite decision as to whether the bone be broken or not, the part should be put up exactly as if a fracture had been made out; for when no fracture is found after the swelling has disappeared, no harm is done; but if there is a fracture, and no special treatment adopted, irrevocable mischief may be the result. If the broken bone cannot be replaced after long-continued efforts, rather than continue them, it is usually better to put up the fracture in the best position attainable, and to improve upon it by subsequent alteration of position, splints, and pads. Splints are applied to prevent the displacement caused by the weight of the limb, by muscular action, and by movement of the patient. *No bandage should be applied beneath the splints*; and too tight application of bandages and splints must be avoided, as it will lead to extra swelling, pain, and occasionally even mortification of the part. The splints should be so arranged that they press equally on all parts of the surface to which they are applied, especial care being taken

to prevent their pressing upon bony prominences, as the ankle; this is done by inserting beneath the splints soft pads of wool or lint on each side the prominence. Splints are best made of pieces of flat board of varying length and breadth, according to the size of the injured limb, padded on the side which is to be placed next the skin. The padding should consist of a thick layer of cotton-wool, or finely teased-out tow sufficiently large to cover one side of the splint and lap over the edges and ends; this, when in place, is to be covered with a piece of rag, or cloth cut two inches larger than the splint in every direction; the edges of the covering should be turned in, and sewn together at the back of the splint by long stitches of strong thread passing from one side to the other; lastly, the ends should be neatly folded over and sewn down.

3. *Complications to be guarded against.* Tight bandaging and pressure of splints upon bony prominences have already been alluded to.

Pouring out of blood into the skin and deeper tissues is generally present, but is much aggravated by tight bandaging, or any other cause producing constriction of the part. In these cases the constriction should be removed, and the foot of the bed raised. Blisters should be pricked, and dressed with vaseline or zinc ointment.

Considerable swelling of the part, due to the fluid portion of the blood being poured out, is generally caused by tight bandaging. All constriction should be removed, and the foot of the bed raised. If the swelling continue after the fracture has united, gentle rubbing and shampooing should be employed.

Occasionally a dislocation and fracture are produced by the same cause. Attempts should be made to reduce the dislocation, assisted by placing the patient under chloroform or ether, and by encasing the fractured part in splints to get a firmer hold on the bone. If reduction fail, the dislocation must be left alone until the fracture has united.

Fractures extending into a joint frequently cause permanent loss of movement. The broken fragments should be very carefully retained in position, and gentle movement of the joint commenced as soon as fairly firm union occurs.

Stiffness of a joint will result if it have been kept too long at rest. Gentle movement should be begun when complete union has taken place.

Compound Fractures are much more serious than simple ones, and in many cases amputation is demanded. Great practical experience is often requisite to ascertain whether a limb should be amputated or saved; but, in many instances, the fate of the limb is evidently sealed, as, when all the tissues are greatly crushed and torn; when a considerable portion of the tissues have been completely torn out; when the whole thickness of the limb has been completely smashed; when a large joint has been opened; when the main arteries and nerves have been ruptured; and, occasionally, when severe bleeding from a deeply situated vessel cannot be arrested. If the patient is not too weak from shock or loss of blood, amputation, if found to be necessary, should be performed as soon as possible.

When the limb can apparently be saved.—1. Arrest the hæmorrhage by turning out the blood-clot and ligaturing the bleeding vessels, or by tightly stuffing the wound with strips of lint or a sponge. 2. Replace the broken ends of the bone into their natural position. There may be difficulty in doing this: should the end of the bone protrude through a small wound it may be necessary to enlarge the opening; should the bone protrude far and be stripped of its fibrous covering, or should its replacement be impossible, the protruding part must be sawn off; should the fracture be comminuted, all completely loose fragments must be picked out. 3. Wash out the wound thoroughly with carbolic or other antiseptic lotion, by means of a syringe inserted into the end of a rubber catheter, the other end of which is introduced successively into all the recesses of the wound. 4. If the wound be large it may be partly closed with sutures; a free outlet for discharges must always be left, and sometimes it is wise to insert a drain through another opening, made specially for it, at the most dependent part. 5. Cover the wound with a dry dressing, applied so that it can be easily removed without disturbing the bone, and set the fractured limb in splints, as described above.

Treatment of Individual Fractures after the fragments have been replaced.

Collar-bone (*Clavicle*).—Place a thick pad, made of cotton-wool rolled up in the centre of a triangular bandage, in the armpit of the affected side, the ends of the bandage being crossed over the opposite shoulder and tied in the corresponding armpit. Sling the arm, including the elbow, of the injured side in a triangular bandage in such a way that the fingers touch the sound shoulder. Lastly, bind the arm of the injured side firmly to the body with a roller or triangular bandage. Sometimes there is difficulty in keeping the shoulders back, and the ends of the broken bone from overlapping; this may be to some extent overcome, by placing a figure-of-eight bandage round the back of the shoulders; but it is better to keep the patient lying flat on his back until union be complete, for, in this position the broken ends fall naturally into place. Union usually takes place in from three to four weeks.

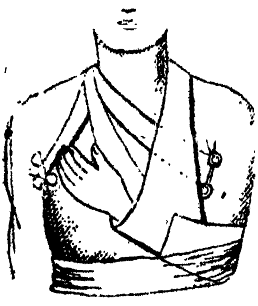


Fig. 10.
Fracture of Collar-bone.

Shoulder-blade (*Scapula*).

1. Broken close to the shoulder-joint: apply the pad, sling, and bandage as for fracture of collar-bone.

2. Broken through the flat portion: apply strips of plaster over the fracture, and a bandage firmly round the chest; place the arm of the injured side in a sling, and bind it to the side.

Humerus (the bone of the arm between the shoulder and elbow).

1. Broken close to the shoulder-joint: apply the pad, sling, and bandage as for fracture of collar-bone.

2. Broken close to the elbow: apply a bandage from the fingers to the elbow, bend the elbow to a fairly acute angle, place a moderate-sized pad of cotton-wool in the bend, and cover the pad and joint with several layers of bandage applied firmly in the figure-of-eight method.

3. Broken in the intermediate part: bandage the arm from the fingers to the elbow; apply four padded splints to the fractured upper arm—one inside passing from the armpit to the elbow, one in front passing from the shoulder to just

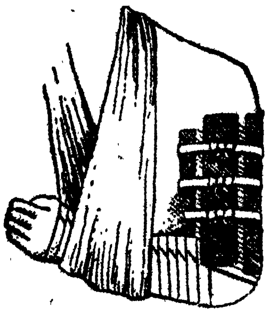


Fig. 11.
Fracture of Humerus.

above the bend of the elbow, one outside, passing from well up on the shoulder to the elbow, and one behind, passing from the shoulder to the point of the elbow,—and fix them with a bandage, or three tightly tied slip-knots made of bandage. Care should be taken that the four splints are not wide enough to overlap one another. Place the hand and wrist, but not the elbow, in a sling; and, lastly, bind the affected arm to the body with a roller or triangular bandage. Union usually takes place in from four to six weeks.

Bones of the Forearm (the *radius*, on the outer or thumb side, and the *ulna* on the inner or little finger side).

1. One or both bones broken close to the elbow: apply apparatus as for fracture of humerus close to the elbow.

2. One or both bones broken between the elbow and wrist: fix with a roller-bandage two splints cut wider than the forearm, and reaching from the fingers to the elbow, one being applied along the front of the arm, the other along the back.

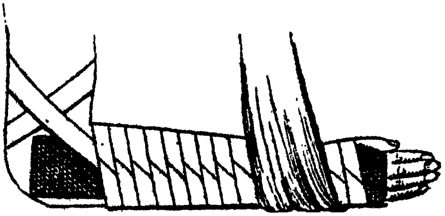


Fig. 12.
Fracture of Bones of Forearm.

3. The radius broken close to the wrist: apply two splints, one along the back of the arm, reaching from the tips of the fingers to the elbow, and one along the front of the arm, reaching from the upper (or elbow) side of the fracture to the elbow; insert two thick pads, one under the back splint and over the short or wrist fragment, and one under the front splint and over the long or elbow fragment.

In fractures of these bones, after the application of the splints, the forearm must be slung at a right angle with the upper-arm, and at the end of ten days the splints should be substituted for shorter ones, reaching from the elbow to the knuckles.

Union usually takes place in from three to four weeks, when the wrist should be gently but firmly moved.

Metacarpal Bones (the longer bones between the wrist-joint and the fingers). Apply a broad padded splint along the front of the arm from the centre of the forearm to the tips of the fingers, and place a pad of cotton-wool in the palm under the splint. Union usually takes place in from three to four weeks.

Fingers.—Apply a narrow splint along the front of the finger, reaching from the wrist to the tip. Having bandaged the splint to the finger it is wise to include the whole hand and wrist in a few turns of the bandage, in order to maintain perfect rest.

Haunch-bones (*Pelvis*).—If possible, apply strips of strong plaster strapping over the fractured bone, and bandage a broad roller round the buttocks and hips. Keep the patient lying flat on his back by means of a long splint passing along the side from the armpit to below the knee, and held in place by bandaging it to the body and thigh. Not unfrequently these fractures are complicated with rupture of the bladder or other internal organs, which greatly increases the danger of the accident. In favourable cases union takes place in eight weeks.

Thigh-bone (*Femur*). — The special symptoms are turning outward of the limb below the fracture, and shortening due to the contraction of the muscles producing an overlapping of the fragments. The shortening will become permanent if the fragments are not returned to their natural position and effectually kept there. The method used to overcome the muscular contraction is called "Extension," and consists not only in drawing out the limb to its full length at the time of setting, but also in effectually

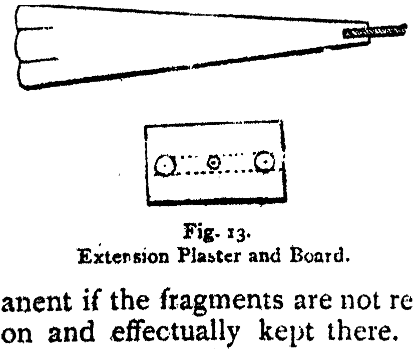


Fig. 13.
Extension Plaster and Board.

and continuously keeping it there until the fragments have united. At the time of setting, extension is made by an assistant pulling at the ankle, but as this cannot be continued permanently, a mechanical contrivance becomes necessary, which may be described as follows: Cut two pieces of plaster strapping, of equal size, that will reach from three inches above the fracture to the ankle-joint. The width of the upper end should equal one-quarter the circumference of the thigh at the point of fracture, and the plaster should taper down to one-and-a-half to two-and-a-half inches in width at the lower end, according to the size of the limb. A piece of strong tape, eight inches long when doubled and about one inch wide, must be sewn to the narrow end of each strip of plaster so as to form a loop. Two slits, four inches in length, must next be made longitudinally downwards at the wide end of each strip. The plasters may now be applied cold, one on each side of the injured limb, the narrow ends being opposite one another at the ankle, and the wide ends opposite one another at the fracture, where they can be held in position by an assistant while the operator firmly and evenly bandages the limb from the root upward. When the bandage arrives at a spot one inch below the fracture, the slit ends of the plasters are to be folded back on the turns of bandage, and the bandage carried over them to keep them in place. The plasters should not be heated before applying, because the warmth of the body causes them to adhere much more firmly than artificial heat. The plasters and bandage must not extend above the fracture. Next cut an oblong piece of board three to four inches wide, and three inches longer than the breadth of the sole of the foot, and bore three holes through it in a row, one in the centre and one about three-quarters of an inch from each end. Pass a piece of strong cord through the centre hole and knot it, so that it will not pull back; push the tape-loops applied to the plasters

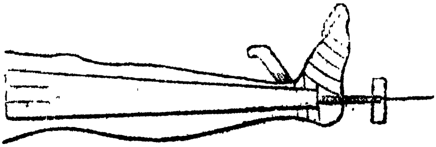


Fig. 14.
Extension Plasters in position.

through the side-holes, and prevent them from slipping back by a piece of strong wire or tough wood passed from end to end of the board, and through each loop on its way. Carry the cord over a pulley placed at the foot of the bed opposite the injured limb, or when no pulley is to be had, through a large hole or notch cut in a piece of board attached to the foot of the bed. An ordinary cotton-reel can easily be converted into an efficient pulley. Lastly, attach a sufficient weight, consisting of a bag containing stones, dry earth, or sand to the end of the cord. The weight must not be applied for six hours, as the plasters will not adhere firmly before then. To prevent the patient being drawn down in the bed, the legs at the foot should be raised eight inches from the floor by means of blocks of wood, bricks, or large stones. The amount of weight varies with the muscularity of the leg, and should be increased daily, until the injured limb is drawn out about half an inch longer than the sound one; as a rule two to four pounds are sufficient for a child, and from six to eight for an adult.

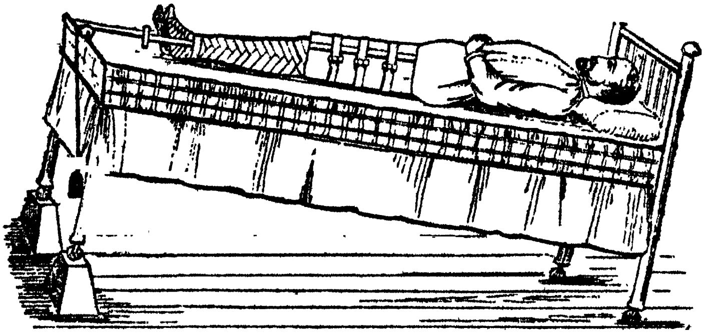


Fig. 15.
Extension.

The broken fragments must be retained in place by four padded splints applied along the whole length of the thigh, —one in front, one behind, one inside, and one outside,— held in place by three firmly tied slip-knots made of pieces of bandage. The body and limb must be kept at rest by a long splint passing from the armpit to the ankle of the injured side, and bandaged firmly to the chest and leg.

Firm union usually takes place in ten to twelve weeks.

Knee-cap (*Patella*).—Great difficulty will be found in bringing and keeping the fragments together, especially when the fracture is transverse, on account of the muscles of the thigh drawing the upper fragment upward. Apply a flat splint, the width of the knee, down the back of the limb from the buttock to the heel. To draw down and fix the upper fragment, place a broad strip of plaster strapping across the limb just above the fragment, and carry it diagonally downwards and forwards on each side, so that the two ends meet behind the splint; the lower fragment is held in position by a similar piece of strapping applied in the reverse direction. Apply a thin pad of lint between each strip of plaster and the skin over the bone. To fix and assist the strapping, apply a bandage in the figure-of-eight method above and below the knee. Lastly, raise the heel on a pillow. To prevent the strapping and bandage from slipping, it is a good plan to cut two notches on each side of the splint, above and below the centre of the joint. The splint and strapping must be kept on for eight weeks, when light side-splints to prevent movement of the knee may be applied, and the patient allowed to go about on crutches, but not to walk on the limb for from three to six months.

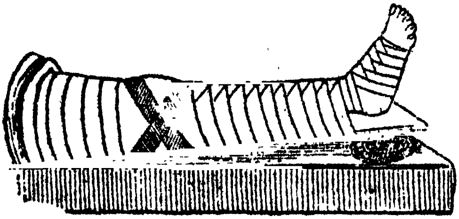


Fig. 16.
Fracture of Knee-cap.

Bones of the Leg (the *fibula* on the outer or little-toe side, and the *tibia* on the inner or great-toe side). Many varieties of fracture of one or both of these bones occur, which require common-sense in the management and choosing of suitable splints to rectify the displacement, and to maintain proper position. These fractures can almost always be set by two splints—one on each side of the leg—cut the width of the calf, and long enough to reach from just below the knee to two inches beyond the heel. The splints must be rolled up one at each end of a large towel or small sheet, folded so that its width is the same as the length of the splints. In rolling up, the splints should be slightly diagonal, so that when they approach one another at the centre of the towel, the knee ends are rather farther apart than the ankle ends ; the towel should be allowed to project two inches beyond the knee ends, so that the wood may not rub the skin ; and the space left between the splints at the centre of the towel should be equal to the width of the leg. The leg must now be placed upon the intermediate part of the towel between the splints, with the heel upon the narrow end, with a pad of cotton-wool beneath it, and a pad on both sides of the foot just below the ankle, to prevent the splints pressing upon the ankle-bones. The splints and their covering of towel must next be raised on each side the leg, a folded cloth placed in front along the skin, and the apparatus fixed by a figure-of-eight bandage round the foot and ankle, and by three slip-knots along the limb (see fig. 17). In some cases where this arrangement is not sufficient to retain the fragments in place, a splint with a foot-piece at right angles to it must be applied to the back of the limb and the sole of the foot, in addition to the side-splints. Occasionally obstinate overlapping of the fragments and shortening wil

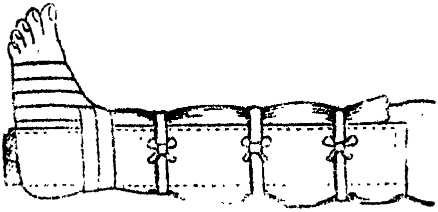


Fig. 17.
Splints for Fracture of Leg.

Fig 18.
Back Splint.

necessitate the application of an extension apparatus to the foot and ankle (see *Fracture of Thigh*); the plasters being cut in the shape of a fan so as to get a firm grip on the foot.

Union usually takes place in six or eight weeks

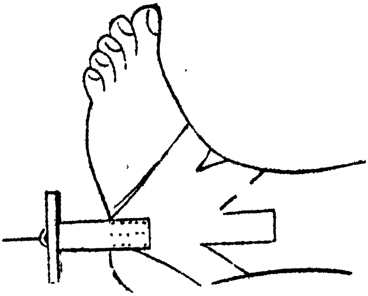


Fig. 19.
Extension for Fracture of Leg.

Bones of Foot.—Keep the part at rest by bandaging it to a back splint with foot-piece (see fig. 18).

Ribs.—Apply strips of strong plaster, two inches in width, round the injured side, extending from the spine behind to the centre of the chest in front. The strapping should extend four inches above and below the fracture, and each strip should overlap half the width of the one above it. A broad roller bandage should be applied over all. Should a sharp fragment of bone have penetrated into the lung, allowing air to pass out beneath the skin—giving a crackling sensation to the touch—no strapping should be applied, the patient being merely kept lying on his back.

Lower Jaw.—The lower jaw must be fixed to the upper, by means of a bandage with four tails. This is made by

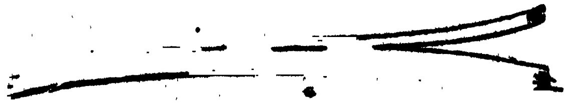


Fig. 20.
Bandage for Fracture of Lower Jaw.

taking a piece of roller bandage one yard and a quarter long and three inches wide; cutting a longitudinal slit at its centre, and one inch from the edge large enough to admit the chin; and tearing a slit down each end to within one inch and a half of the centre slit. The chin is now placed in the centre slit with the narrow edge beneath the lower lip, and the broad edge under the chin; the narrow upper tails are then carried straight backward, and firmly knotted behind at the upper part of the neck, and the broad lower tails carried upward, and tightly knotted on the top of the scalp. Lastly, all four tails are brought together at the back of the head and firmly tied. Occasionally this mode of treatment may be assisted by passing a piece of thin wire round the teeth on each side of the fracture. The patient should rinse his mouth out frequently with weak Condy's fluid and water or Hazeline.

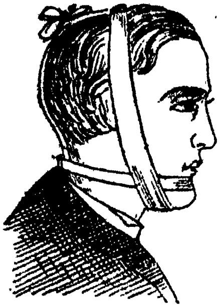


Fig. 21.
Bandage for Fracture of Lower Jaw.

Union usually takes place in about four weeks.

Skull.

1. *Broken through the superficial portion (Vault).*—Simple fracture here is not more serious than simple fracture elsewhere; but frequently it may be complicated by the fragments being driven down upon the brain, called a "depressed" fracture; by the blood, or its fluid portion being poured out upon the brain; and by concussion (see p. 46). The fracture, when neither "compound" nor "depressed," is always difficult and often impossible to discover; when "compound" it is easily seen; when "depressed" a dent can be felt.

When the fracture is simple and uncomplicated, all that is required is rest in bed, milk diet, mild aperients, and an ice-bag or cold-water cloths applied to the head.

When the fracture is compound, and not depressed, the wound must be thoroughly cleansed, the fibrous covering of the bone brought into place and fixed there with catgut sutures, and the edges of the wound stitched together.

When the fracture is depressed, experience is required to say whether an operation to raise the depressed bone be required. As a rule, if there are no urgent symptoms, and especially in children, such an operation is not required; but should there be paralysis, complete or partial insensibility, etc., it is to be recommended. The operation is not an easy one, and can hardly be performed by an untrained person; however, in some cases it is possible to insert a piece of flat metal beneath the depressed bone, and to lever it up, using the edge of the sound bone as the fulcrum. In most cases this cannot be done, as there is no opening through which to introduce the instrument; it is then necessary to drill an artificial opening through the bone with a small circular saw, called a "trephine," from which the depressed fragments can be raised.

2. *Broken through the deep part (or "base") behind the eyes nose, and mouth.*—The pupils are usually of unequal size; blood or watery matter oozes from one or both the ears and nostrils; there may be paralysis, complete or partial insensibility; and when the fracture is behind the eyes there is prominence of the eyeball, congestion of the membrane covering the eye, and a pouring out of blood into one or both eyelids, producing an appearance similar to a black eye. In these cases the patient must be kept in bed, lying on his back, and absolutely quiet. Ice-bags or cold-water cloths should be applied to the head, and milk diet, mild aperients, and soap-and-water enemata given. If the case progress favourably the patient may be allowed to get up at the end of four weeks.

CHAPTER III.

DISLOCATIONS, SPRAINS, DROWNING, ETC.

DISLOCATIONS, OR BONES DISPLACED AT THE JOINTS.

Symptoms.—1. The injury is always at a joint; but a fracture into or close to a joint often occurs, and may be mistaken for a dislocation.

2. The appearance and shape of the joint is altered in all cases. Frequently the dislocated joint has its circumference increased, and the length of the limb is lengthened or shortened, according to the position of the displaced bone or bones. In all cases the injured joint should be compared with the corresponding joint of the opposite side.

3. The joint is always more or less "jammed" and immovable.

4. There is no grating of the fragments of a broken bone on one another. The fine crackling of a rheumatic joint must not be mistaken for the crepitus of a broken bone.

Treatment.—The bone or bones should be returned into the proper place as soon as possible after the accident. Immediately after the injury the patient will probably be in a fainting condition, which will render replacement easier. Frequently the muscular contraction and rigidity in a patient, who is not in a fainting condition, are so great as to defy all attempts at reduction until chloroform or ether has been administered. There are two ways of replacing dislocations :—

1. *By manipulation*, or making the joint go through certain movements, which will free the bones from one another, and cause them to slip into their natural position.

2. *By extension*, or *forcibly pulling out* the limb, so that all muscular resistance is overcome by a greater force. This is done by the operator grasping the limb below the dislocation, and then gently but deliberately pulling.

The former method is the better, as it is less likely to injure the surroundings of the joint; but it has the disadvantage of being a more complicated proceeding than extension.

After the dislocation has been reduced the joint must be kept at rest for a time (otherwise the bone or bones may slip out of place again), but not too long, for fibrous bands will form between the ends of the bones, causing pain and stiffness. In from seven to ten days' time the operator should gently move the joint, and repeat the proceeding daily, the splints or bandages being re-applied after each sitting.

TREATMENT OF INDIVIDUAL DISLOCATIONS.

Collar-bone (*Clavicle*).—Dislocation may be at either end. Replacement is easily effected by placing the knee on the spine between the shoulder-blades, and drawing back the shoulders. The great tendency for the bone to slip out of place again, is to be overcome when the dislocation is at the inner end, by keeping the shoulders drawn back by a figure-of-eight bandage, firmly bandaging a thick pad of lint over the joint, and by applying the pad, sling, and bandage as for fracture of collar-bone. If the dislocation be at the shoulder-end the pad should be held in place by a wide strip of strong plaster carried firmly over the pad, down the arm, and round the point of the elbow. Lastly, the arm of the affected side should be placed in a sling and bound to the body, and the patient kept lying flat on his back for seven days.

Shoulder-joint.—Replacement by manipulation or extension.

1. *Manipulation.*—Bend the forearm on the upper arm, press the elbow to the side, twist the arm outwards till the forearm is at right angles to the body. If this be not successful, raise the elbow from the body, and screw the arm inwards till the hand touches the opposite shoulder.

2. *Extension.*—The patient being placed on his back, the operator removes his boot and seats himself on the injured side, facing the patient. He then places his heel in the armpit, and, grasping the arm by the wrist, pulls steadily downwards until the bone slips into its place. Should this fail, the arm may be pulled steadily upward over the head.

After replacement put the arm in a sling, and bind it to the side. The joint should not be used for two or three weeks.

Elbow-joint.—Effect replacement by first straightening the arm as far as it will go, and then sharply bending up the forearm upon the upper arm.

After replacement apply a figure-of-eight bandage round the elbow, and sling the arm. The joint should not be used for two to three weeks.

Wrist.—Effect replacement by simply drawing out the hand. It is a very rare dislocation. After replacement apply a splint along the front of the forearm and palm of hand, and sling the arm. The joint should not be used for two weeks.

Fingers or Thumb.—Effect replacement by drawing out the joint, either with the hand, or by a slip-knot of bandage applied round the finger below the joint, and pressing the head of the dislocated bone into place at the same time.

After replacement apply a narrow splint. The joint should not be used for ten days.

Hip-joint.—The displacement may be (1) upward and backward; (2) downward; or (3) forward. In all cases chloroform or ether should be given, without which replacement will generally be impossible.

1. *When upward and backward* the limb is shortened, the foot is turned inward, the thigh is bent upward toward the abdomen, and lies slightly across the sound one. Replacement is effected by manipulation, as follows: bend the thigh as far upward as it will go upon the abdomen, then draw it away from the body to its fullest limit, screw the limb outward, and, lastly, sharply bring the limb back to its straight position.

2. *When downward*, the limb is lengthened, the foot is turned slightly outward, and the injured leg is advanced in front of the sound one. Replacement is effected by manipulation, as follows: bend the thigh as far upward as it will go upon the abdomen, carry the thigh across the sound one, screw the limb inward, and, lastly, bring the limb sharply back to the straight position.

3. *When forward*, the limb is slightly shortened, the foot is turned considerably outward, and the limb lies outward from the sound one. Replacement is effected by manipulation, as follows: bend the thigh as far upward as it will go upon the abdomen, screw the limb inward, carry the thigh across the sound one, and, lastly, sharply bring the limb back to the straight position.

After replacement, the patient should be kept lying on his back, with his legs tied together, for two weeks, when gentle movement should be begun. The joint should not be used for five weeks.

Knee-cap.—Effect replacement by bending the knee and pressing the bone into place. After replacement there will be considerable swelling of the knee. The limb should be placed on a back splint, and hot fomentations applied to the joint. A knee-cap should be worn afterward, as the dislocation is apt to recur.

Knee-joint.—Effect replacement by drawing out the limb, and at the same time pressing the bones into place.

After replacement adopt the same treatment as for dislocation of knee-cap.

Ankle.—Dislocation here is usually accompanied by fracture. Effect replacement by drawing down the foot. After replacement, the treatment must be the same as for fracture.

Toes.—Replacement the same as for fingers.

SPRAINS AND STRAINS.

These injuries usually occur at a joint, and result from overstretching, and sometimes tearing, of the strong fibrous bands (or ligaments) which bind the bones together at the joints, together with more or less tearing of small blood-vessels. Occasionally muscles or tendons suffer in the same way.

Symptoms.—(1) Sudden sharp pain at the time of the accident, and sometimes a sensation of something "giving way." (2) Swelling and discolouration; the former coming on rapidly, the latter in a few hours. (3) The bones of the part are not displaced. Sometimes, owing to considerable swelling, it is impossible to decide whether there be a fracture or not; in such cases the injury should be treated as a fracture until a definite decision can be arrived at.

Treatment.—A sprain may be a very slight or serious affair, but in all cases great care should be taken, *as sprains only too often lay the foundation of permanent joint-disease.* The joint must in all cases be kept at rest until the swelling and pain have gone. There are three varieties of applications which may be used, viz., cold, heat, and pressure.

1. *Cold*, applied by means of cold-water cloths, or, better, by means of pounded ice placed in a macintosh bag, is useful when the injury is seen early, and before there is much swelling, especially when the treatment is kept up for two or three days.

2. *Heat*, applied in the form of hot fomentations, is very soothing and useful when the injury is seen some time after the accident occurred, when there will be considerable swelling and pain. The fomentations should be continued for two or three days, when the treatment by pressure should be resorted to.

3. *Pressure* is probably the best way of treating sprains, and may be used at any stage of the treatment, but it is most useful when applied at the very first, as it then prevents swelling taking place. Pressure must be applied evenly. There are various modes of application:—(1) Strips of plaster may be applied round the whole circumference of the joint. (2) The joint may be wrapt in cotton-wool, with a bandage applied evenly and firmly over it. (3) The part may be evenly and firmly bandaged with a dry roller, which when in place is to be thoroughly soaked in water, and with gutta-percha tissue or macintosh. The dry

bandage, when wetted, shrinks, and thus causes extra pressure, in addition to acting as a cold compress.

The injured part should be kept at rest until the pain and the greatest part of the swelling have gone; even then it must not be used, but gently and firmly moved by the operator. If this movement is not begun in good time, stiffness of the joint will take place from the formation of fine fibrous bands between the ends of the bones. Sometimes the swelling and stiffness with weakness and pain remain obstinate for some weeks; this may be due to two causes, viz., keeping the joint at rest for too long a time, or to the patient using it too much. In such cases, gentle rubbing with sweet oil, and shampooing with hot and cold water, are generally useful. When all the swelling has subsided, and the joint can be freely moved without pain, the patient may be allowed to go about as usual, but not before.

BURNS AND SCALDS.

Burns are caused by fire, hot metal, and sometimes chemicals, as vitriol and caustic potash. Scalds are caused by hot fluids and steam. The result of both is the same, and, according to the amount of harm done, three degrees are recognisable: 1, simple reddening of the skin; 2, formation of blisters; 3, charring and complete destruction of the skin and deeper parts.

In severe burns the patient passes through three stages:

1. *Prostration;* the patient is cold, shivering, and faint, the pulse is quick and weak, the temperature is below normal; sometimes there is restlessness and sometimes great collapse. *This stage lasts eighteen to twenty-four hours.*

2. *Reaction;* the patient is feverish, there is a tendency to congestion about the burns, and also of the lungs, stomach, and intestines, the latter causing diarrhœa and vomiting. This stage terminates when the destroyed tissues separate from the body.

3. *Suppuration;* the patient becomes exhausted from the profuse discharge from the injured surface. This stage terminates with the healing of the burn or death.

The danger and severity of a burn depend more upon its superficial extent than its depth; thus an extensive burn of the first or second degree is more serious than a deep burn of small external area. Burns of the body are more dangerous than of the limbs, and the young and old suffer more than adults.

Treatment.—1. *Constitutional.* During the stage of prostration, reaction must, if possible, be produced by wrapping the patient in warm blankets, applying hot-water-bottles, or heated bricks or stones wrapped in flannel to the body and limbs, and by giving small quantities of hot brandy-and-water until the pulse improves, when hot soup or beef-tea may be given. Pain is relieved by full doses of opium. During the stage of reaction the patient's strength must be supported by giving milk, beef-tea, and soup, and as little alcohol as possible. Quinine in one or two grain doses is very useful. Diarrhœa must be checked, and inflammation of lungs, when it exists, attended to. During the stage of suppuration give a full diet with wine or beer, and tonic medicines, as quinine, iron, and strychnia.

2. *Local.* Care should be taken when removing the clothing not to rub or roughly handle the injured surface. Burns from gunpowder explosions should be gently syringed with warm water, to remove all specks of powder.

Burns of the first degree (redness). Apply cold-water compresses, absorbent wool wrung out in Hazeline or a strong solution of Bicarbonate of Soda, or some oily dressing covered with cotton-wool.

Burns of the second degree (blistering). The blisters should be drained by making a few pricks in them, their skin-covering being preserved and smoothed down. All air should then be excluded by an oily dressing covered with cotton-wool and a bandage. A good oil to use is Carron oil (consisting of equal parts of linseed-oil and lime-water), but any kind of sweet oil will do. In a few days zinc ointment (consisting of one drachm of oxide of zinc to one ounce of fresh lard) may be applied instead.

Burns of the third degree (charring). Apply Carron or other oil as directed above, and change the dressing only when the discharge appears outside, or when it becomes offensive; at every dressing gently wash the injured surface with warm carbolic lotion (carbolic acid one part, water forty parts) or Hazeline lotion (Hazeline one part, water four parts); and when there is an offensive smell dust with powdered iodoform. If the destroyed tissues do not separate quickly, a linseed poultice should be applied; when they have separated, a dressing of zinc ointment may be used. If during the process of healing the injured surface becomes raised above the surrounding skin, a stick of nitrate of silver should be rubbed over it. Healing is often hastened by applying strips of plaster from one side of the raw surface to the other, placed about a quarter of an inch apart. Burns of this degree cause in healing great contraction of surrounding parts; thus, when burns occur at the joints or neck, the injured part must be constantly kept in the straight position by splints, extension (see *Fractures*), or any other contrivance that can be devised; and not only must this contraction be attended to up to the time of healing, but also for some months afterward.

Occasionally, when a limb is much charred, amputation will have to be performed, either immediately or subsequently.

FROST-BITE.

Uncovered parts of the body when exposed to intense cold become at first red and tender; next, hard, white, and insensitive; and, lastly, if the exposure be still continued, they pass into a state of dry mortification.

Treatment.—In cases where the skin is red or livid, and has not become black and mortified, recovery is likely to ensue if the parts are gradually restored to their natural warmth. This is to be done as follows: place the patient in a room without a fire; rub the part with snow or cold-water cloths, and, if the breathing be unnatural, perform artificial respiration (see *Drowning*) alternately with the rubbing; give cold brandy-and-water or cold soup in small quantities. When the breathing becomes more natural and the injured part less stiff, move the patient into a moderately warm room, and cover him with cold sheets. After a little time rub with warm dry cloths, and gradually raise the temperature of the room. Lastly, when the circulation has been fairly restored, wrap the part in cotton-wool, and keep it at rest for some days. Should it become swollen, purple, and blistered, there is great danger of mortification setting in; the limb should then be wrapt in cotton-wool, carefully bandaged and raised on a pillow. Should mortification of the limb set in, amputation will have to be performed, but not until a distinct line has formed between the diseased and healthy tissues. When mortification appears from the first, it is of a dry nature, the part becoming black, and shrivelling up, never to regain warmth or life. In such cases, amputation must be performed as soon as the distinct line appears.

DROWNING.

The following rules for restoration of persons apparently drowned should be known by everyone.

1. Remove all clothing from the neck and chest, and dry the skin quickly.

2. Clear away all mud, etc., from the mouth and nose. Draw out the tongue, and keep it out with fingers, or, better still, with an elastic band passed round it and under the chin.

3. Empty the water out of the mouth, stomach, and lungs by placing the patient on his face, with one arm under his forehead, and a thick roll of clothing under the pit of his stomach; and by pressing for a few seconds, two or three times, on the back and sides of his chest.

4. Turn the patient on his back, with the roll of clothing under his shoulders, and the tongue still drawn out.

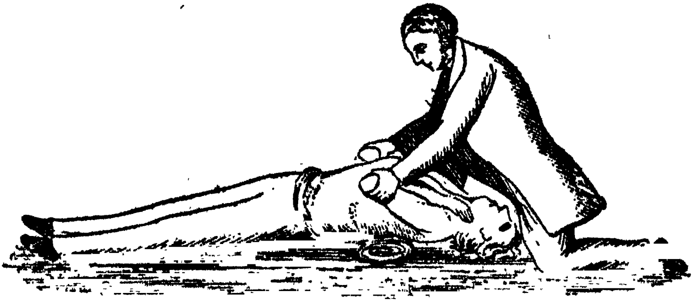


Fig. 22.
Artificial Respiration.—Expiration.

5. Artificial respiration must now be commenced by "Sylvester's method," which is performed as follows: kneel behind the head of the patient, grasp his arms at the elbows, and press them firmly against the sides of the chest for two seconds; by this means air is driven out of the lungs. Next draw the arms steadily upward as far as they will go behind the head, and keep them in that position for two more seconds; by this means air is drawn into the lungs. These movements are to be repeated about fifteen times in each minute until natural breathing begins, or until all hope of restoring life has gone. While artificial respiration is being performed, others may be drying and rubbing the legs, applying ammonia to the nostrils, and dashing cold

water upon the chest. These efforts should never be abandoned till it is certain beyond all question that life is extinct. It may sometimes be an hour before signs of resuscitation appear.

6. As soon as natural breathing begins leave off these movements, wrap the whole body in dry warm blankets or clothing, and under this covering energetically rub the limbs upward. Lastly, place the patient in a warm bed with hot-water-bottles or bladders, or heated bricks or stones wrapped in flannel, applied to the body and limbs.

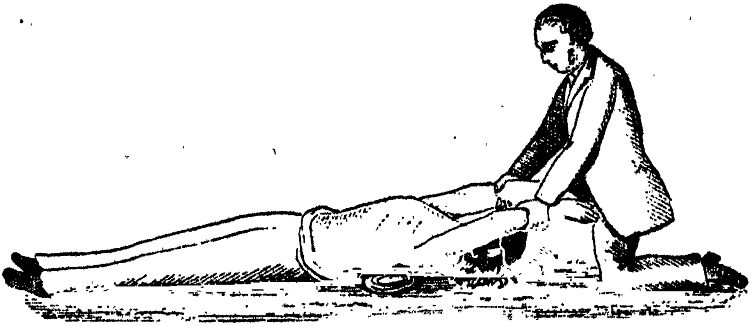


Fig. 23.
Artificial Respiration.—Inspiration.

7. When the patient is able to swallow, give warm water, tea, coffee, or brandy-and-water in small quantities.

N.B.—Artificial respiration can be used when necessary in cases of fainting, frost-bite, poisoning, and suffocation of all kinds.

CHAPTER IV.

INJURIES TO THE EYE, HERNIA, ETC.

THE EYE.

Bruising of the membrane covering the eye (the conjunctiva) is characterised by a bright red spot appearing in the membrane soon after the blow, which gradually becomes less bright and spreads over the front of the eye.

Treatment.—Syringe with cold water four or five times daily, and rest the eye for two or three days.

Wounds of the conjunctiva and eyeball are frequently accompanied by swelling of the eyelids.

Treatment.—A stitch is seldom required. A pad of lint wrung out in cold water should be laid over the eye, and fixed in place by one turn of a roller bandage. It is often advisable to drop into the eye night and morning a few drops of atropin solution (sulphate of atropia 2 grains, water 1 ounce). Should there be a discharge of pus (or matter) after the swelling has subsided, a few drops of sulphate of zinc solution (sulphate of zinc 1 grain, water 1 ounce) may be dropped into the eye twice daily.

Burns.—*Treatment.*—A few drops of olive oil or milk should be dropped into the eye, the eyelids closed, and covered with cotton-wool held in place by a turn of a roller bandage. This should be repeated thrice daily, when the discharge should be washed away with warm water or glycerine lotion (glycerine ½ ounce, water 8 ounces). Pain is relieved by using *freshly-made* cocaine drops (cocaine 3 grains, water 100 drops), and when there is much inflammation atropin solution (see above) should be used. When a burn is produced by strong acids the eye should first be syringed with bicarbonate of soda lotion (bicarbonate of soda 5 grains, water 1 ounce) or with tepid water, after which the oil-drops and cotton-wool should be used as directed above. When a burn is produced by quicklime, or caustic potash or soda, the eye should be syringed at once with weak vinegar and water, and dressed as directed above.

Foreign bodies in the Eye cause great irritation, a feeling of grit in the eye, inability to face the light, and a copious flow of tears.

Treatment.—The foreign body must be at once removed. As it is often very small there may be some difficulty in finding it; the eye should therefore be searched systematically by first examining the inside of the lower lid, then the front of the eye, and lastly the inside of the upper lid. When the body has been found it must be removed—if loose and floating, with a fine camel's-hair brush; if buried in the tissues, with the point of a strong needle with its point made flat, which must be used sideways. This operation is made easier by putting a few drops of cocaine solution (see above) into the eye before commencing. After the body has been removed olive oil should be dropped into the eye. Should the pain continue cocaine may be used again; and if inflammation sets in hot fomentations should be applied, and atropin solution (see p. 83) dropped into the eye. When a splinter of wood or a piece of metal penetrates the eyeball it must be extracted, and the case treated as directed for wound of eye.

Conjunctivitis.—(Inflammation of the *conjunctiva*, or the membrane covering the eyeball and lining the lids.) This may be due to an unascertainable cause, or it may be brought on by cold, foreign bodies in the eye, or injuries. Occasionally it is epidemic, and spreads rapidly from person to person.

Symptoms.—Sensation of grit in the eye. The "white part of the eye" becomes a bright red colour. The discharge from the part is watery at first, but afterward consists of thin pus, which tends to glue the lids together, and to form dry scabs among the eyelashes. The central part of the eye in front of the pupil and its coloured margin is clear.

Treatment.—Thoroughly wash the eye with tepid water every three hours, and after each washing drop in some sulphate of zinc solution (see page 83). In cases where there are much swelling of the lids and inflammation of the membrane, nitrate of silver solution (nitrate of silver 1 grain, water 1 ounce) may be dropped in twice daily. To prevent gumming of the lids together, vaseline, *fresh* lard, or butter should be smeared along their edges. The eye must not be covered up, but should be protected from the light by a shade. In severe cases atropin solution (see page 83) should be used twice daily. Keep the bowels open, and give tonics, as iron and quinine.

Corneitis.—(Inflammation of the *cornea*, or the transparent part of the eye in front of the pupil and its coloured margin.) This may be caused by injuries, foreign bodies in the eye, and certain constitutional states.

Symptoms.—At first there is a pinkish redness round the border of the cornea, which fades off into the white part of the eye. The eye becomes irritable and shuns the light. The cornea gradually becomes hazy, and the sight is dimmed. As the inflammation continues these symptoms increase in severity until the part or whole of the cornea becomes opaque and dull like ground glass.

Treatment.—1. *Constitutional.* Keep the bowels well open. During the attack give iron and quinine as tonics, and opium for sleeplessness.

2. *Local.*—Shade the eyes, and where necessary keep the patient in a darkened room. Atropin solution (see page 83) should be dropped in twice daily Pain can be relieved by

applying a cold-water compress over the eye, and by dropping in cocaine solution (see page 83). Blisters, the size of a halfpenny, applied on the temple often do good.

N.B.—Most convenient tabloids of cocaine and sulphate of atropia are to be bought, which can be dissolved in water when required.

HERNIA OR RUPTURE.

This condition consists of a protrusion of any part of the contents of the abdomen through an opening in the abdominal wall; the protruding part being covered by the skin, fat, and the lining membrane of the abdomen, the latter being forced outward with the ruptured organ. A rupture usually occurs into the scrotum, at the upper part of the thigh where it joins the abdomen, or at the navel.

When a rupture can be easily returned into the abdominal cavity it is called a "Reducible Hernia"; when it cannot be returned it is called an "Irreducible Hernia."

The various causes of Irreducible Hernia are:—

1. Neglected herniæ, which increase to a large size, or develop a quantity of fat round them, or become adherent to the membrane covering them.

2. Stoppage of the ruptured gut with pieces of undigested food, or motions.

3. Inflammation of the rupture.

4. Strangulation, caused by the opening through which the rupture passed being so small that not only is the passage of the gut back into the abdomen impossible, but also the passage of its blood-supply and motions.

Reducible Hernia.—*Symptoms:* a smooth regular mass, narrowed into a neck where it is connected with the abdomen, is found at one of the sites before mentioned. The mass is elastic, and is often larger when the patient stands up than when he lies down. An impulse can be felt in it when the patient coughs, and it is easily returned into the abdominal cavity with a gurgling sound.

Treatment.—A well-fitting truss should be applied after the hernia has been replaced in the abdomen. If a truss cannot be obtained, relief may be given by placing a pad of lint over the opening, and keeping it in place by strips of plaster and a roller bandage applied firmly in the figure-of-eight method.

Irreducible Hernia.—1. **From large size, fat, or adhesion.**—*Symptoms:* The same as for Reducible Hernia, except that the mass cannot be returned into the abdomen.

Treatment.—If the hernia be large, a bag suspender should be worn; if small, a truss with a hollow pad. The bowels must be kept regular.

2. **From stoppage with food or motions.**—*Symptoms:* This is most common in ruptures at the navel. A hernia which is usually easily reducible becomes harder and larger than before, doughy to the touch, and painful. On coughing an impulse can be felt in it, the patient complains of twisting pains, sickness, and sometimes vomiting. The bowels are partially constipated and the mass cannot be returned into the abdomen. There are no general constitutional disturbances.

Treatment.—Keep the patient in bed with the knees raised on a pillow; administer a little opium to relieve severe pain, and nothing else by the mouth except iced water; in twenty-four hours or so, when the most prominent symptoms have subsided, give a soap-and-water enema, followed in three or four hours by a dose of castor-oil. After the bowels have been thoroughly emptied, the hernia can generally be returned into the abdomen.

3. **From inflammation.**—*Symptoms:* The mass is hot and painful, it cannot be returned into the abdomen, but has the impulse in coughing. There are slight fever, slight vomiting, and sometimes constipation. There is no great constitutional disturbance, the symptoms being chiefly in the rupture itself.

Treatment.—Absolute rest in bed with the knees raised on a pillow; milk diet; ice to suck; an ice-bag applied over the hernia; and opium when there is much pain. When the pain and redness have passed off, give a soap-and-water enema and a dose of castor-oil; and when the bowels have well acted, return the rupture into the abdomen.

4. **From strangulation.**—This is the most dangerous variety. It may be met with in all kinds of hernia, and may occur in any case, but more especially in a recently formed one.

Symptoms.—In herniæ which have existed before, the mass becomes larger, harder, and more painful, especially at its neck; on coughing it has no impulse, and it is impossible to return it into the abdomen. The patient complains of twisting pains in the belly, and of feeling sick and faint. This is followed by vomiting, the vomited matter being at first food, then green-coloured, and lastly brown-coloured, with a most offensive smell. The vomiting is frequent and persistent. The bowels are completely constipated. As the case proceeds, the pain and vomiting become worse, the skin becomes clammy, the face pinched, the pulse small and rapid, the strength vanishes, and, unless the condition be relieved, the patient passes into a state of complete collapse, and dies.

Treatment.—If the strangulation be not relieved, death invariably occurs. Strangulation is a condition which is seriously affected by delay, therefore what is to be done must be done at once. The patient should be placed in bed, and given ice to suck. The hernia must be next reduced: this is to be done by "manipulation," or by an operation.

1. *Manipulation.*—Place the patient in a bed with the foot end raised eight inches from the floor; let the head and shoulders lie low; raise the buttocks on pillows, and bend up the thighs toward the abdomen. The neck of the hernia should next be steadied with the left thumb and forefinger, while the right hand raises and gently squeezes the mass into the opening. Another method of reducing the rupture consists in gently pushing just below the neck of the mass, and returning it little by little into the opening in the abdominal wall. *Violent pressure must never be used under any circumstances whatever.* Manipulation may be much assisted by applying an ice-bag over the hernia for two hours before, and by placing the patient under chloroform or ether during the attempt. In many cases this procedure will fail: and in the following cases it should not be attempted: 1, when the symptoms are very severe; 2, when the strangulation has existed for three or four days; 3, when the rupture was previously irreducible.

2. *Operation.*—This is required when manipulation fails, or cannot be employed. The instruments required are a sharp-pointed knife, blunt-pointed knife, artery forceps, director, scissors, cat-gut ligature, curved needles, silk, and small sponges. The hernia must be shaved and thoroughly washed, and the hands of the operator and all the instruments perfectly cleansed. The patient beingplaced under

chloroform or ether, an incision two inches in length is made with a sharp-pointed knife through the skin over, and in a line with, the "neck" of the hernia (or the narrowed part where it passes through the opening into the abdomen); the fat and other tissues must be carefully cut through until the "sac" (or membrane containing the strangulated gut) is exposed, and all arteries ligatured as they are divided. The sac is known by its bluish colour and its resemblance to a thin bladder containing fluid. *Great care must be taken not to mistake the gut itself for the sac*, when the latter has been prematurely opened by accident. The sac must next be pinched with forceps, raised from its contents, and opened, care being taken not to injure the gut. From the opening thus made some fluid will exude. The operator's finger must now be pushed up along the side of the gut toward the constriction and a director gently inserted through the constriction; a blunt-pointed knife is then run along the groove of the director, and the constriction partially divided by cutting upwards and away from the gut, care being taken that a portion of the gut does not overhang the director and so get wounded by the knife. The operator's finger is next inserted into the opening thus made, and further dilatation produced until there is sufficient room for the contents of the sac to be returned into the abdomen. A little more bowel must now be pulled down and carefully examined; if its surface is glistening, however dark-coloured it may be, it is safe to return it into the abdomen; but if it is black, dull, sticky, torn, or in a state of mortification, *it must not be returned.* If the gut be sufficiently healthy, the contents of the sac must now be gently pushed through the enlarged opening into the abdomen, and the opening closed with two strong catgut sutures. The external wound must next be washed with an antiseptic lotion, closed with sutures, a drain inserted at its lowest part, and dressed with powdered iodoform covered with an absorbent wool-pad. The patient must be placed and kept on his back with the knees raised on a pillow. For twenty-four to thirty-six hours no food ought to be taken, all that should be allowed being, ice to suck, or a little cold brandy-and-water when there is faintness. After twenty-four hours the food should consist of milk and beef-tea given very carefully, and continued for a time, varying with the condition of the patient.

The bowels should be left to act of themselves, but if there have been no action at the end of seven days a soap-and-water enema should be given, followed by a small dose of castor-oil. Opium may be given for the first day or two if there be no sickness. During and after the healing a pad should be kept firmly bandaged over the wound, and, when possible, a truss should be applied as soon as the wound has become thoroughly sound.

Should the sac contain a mass of fat (*omentum*) in addition to the gut, the fatty mass should, if possible, be also returned; but sometimes, owing to its size, or adhesions to the sac, it is impossible to do so; it must then be tightly ligatured at its narrow part, near the abdominal opening, by passing through it a needle carrying a piece of stout disinfected silk, cutting the silk at the eye of the needle, and firmly tying it round each side of the mass. The mass is then to be cut off external to the silk, and any bleeding from the stump arrested by ligatures. The ends of the silk are then to be cut off short, and the end of the stump allowed to block the opening into the abdomen; the wound must lastly be treated as directed above.

NAWAB SALAR JUNG BAHADUR,

When the gut is torn or in a state of mortification, the risk to life is great. The constriction must be divided, the gut drawn out until a healthy part is arrived at, and the ruptured mass allowed to lie in the external wound merely covered with lint soaked in warm water. In some hours' time the gut must be opened, the mortified part cut off, the motions allowed to escape, and a simple water-dressing applied. Should the case progress favourably the motions will continue permanently to pass through the opening, and not through the natural one.

RETENTION OF URINE.

When urine cannot be expelled from the bladder, "retention" is said to exist. Such retention is caused by (1) nervousness; (2) inflammation of the whole or any part of the passage; (3) permanent contraction (or stricture) of the passage; (4) stone in the bladder or passage; (5) various diseases of the bladder.

Symptoms.—The patient complains of a great desire to pass water, which, notwithstanding great straining, he is unable to do; but occasionally, especially in old men, the bladder becomes over-distended without giving rise to any particular discomfort. On examining the lower part of the abdomen the distended bladder can be felt as a rounded mass often extending as high as the navel.

Treatment.—The bladder must be emptied at once. Often, especially when the retention is due to nervousness or inflammation of the passage, this may be done naturally by letting the patient sit in a hot bath and pass his urine into the bath-water. Sometimes, in cases of retention caused by a stone in the bladder, the patient may be able to pass water while lying on his back or side when he is unable to do so while standing or sitting. When these means fail a tube called a "catheter" must be passed along the passage into the bladder. Catheters are made of soft or stiff rubber, or silver, and are of various sizes numbered from 1 to 12. The rubber ones, especially the soft variety, are the safest and most easy to use; but generally they cannot be passed when the retention is due to a permanent contraction of the passage, owing to their not being firm enough to overcome the contraction. *In passing a catheter great patience and gentleness are required;* impatience and rough handling of the instrument being likely to produce a tear of the passage, especially when a small-sized silver one is used. To pass a flexible catheter, place the patient on his back with the knees slightly raised, take a No. 8-sized instrument warmed and oiled outside, introduce it into the external opening of the passage, and gently push it onwards bit by bit till it passes into the bladder; any obstruction on the way may frequently be overcome by gently screwing the instrument from side to side, at the same time pressing it onwards. Should this fail smaller sizes must be tried till one is found that will pass.

If flexible catheters fail, as is frequently the case in permanent strictures, a silver instrument must be used. It is best to begin with a fair-sized one, such as a No. 8 or 10, which, if it will not pass, will exactly mark out the situation of the obstruction. To pass a silver catheter, place the patient as before, warm and oil the instrument, then, standing on the left side of the patient, hold the penis with the left hand, and with the right insert the point of the catheter into the external opening of the passage, the handle being on the abdomen. The instrument must now be carried gently along the canal, and as it passes, its handle must be raised from the abdomen and gradually carried toward the feet in the middle line of the body till it is almost between the thighs and pointing to the feet; it will then have reached the bladder. *Very little force should be used* to carry the instrument along, and should any obstruction be felt, the operator should withdraw the instrument a little way and try again, always being most careful not to lacerate the canal. If the larger instrument fail smaller ones must be used until one is found which will find its way into the bladder. In troublesome cases chloroform or ether is of great assistance.

ABSCESS.

An abscess is an enclosed collection of *pus* (or matter) in any part of the body, and is caused by inflammation. When the collection forms quickly, and with much pain, it is called an "acute abscess"; when its development is slow, and unaccompanied by any particular pain and redness, it is called a "chronic abscess."

Acute abscess.—*Symptoms:* The patient is feverish and complains of a dull aching pain; the affected part is red and swollen, the swelling being at first hard, but afterward soft in the centre, and giving the sensation of fluid moving about when the fingers are lightly laid upon it. The pus gradually works its way to the surface, giving the skin a shiny appearance by putting it upon the stretch. Then a pale-coloured spot appears in the centre of the red swelling, and lastly the abscess, if not opened, bursts.

Treatment.—Before the pus forms, apply hot fomentations or poultices sprinkled with laudanum. As soon as the matter has been detected it should at once be let out; by doing this the patient is spared much pain, and the tissues from destruction; this operation must be performed by making a free incision with a sharp knife, care being taken, especially when the abscess is deeply situated, not to injure important blood-vessels or other structures. When the pus has been squeezed out a drainage tube should be inserted and a poultice applied. If in opening the abscess an artery have been cut through, it should, if possible, be ligatured; but if this be impossible, tightly stuffing the wound with strips of lint will generally be sufficient. At the end of twenty-four hours the strips of lint should be removed, and, if there be no further bleeding, a drainage tube inserted in their place; but if the bleeding begin again, fresh strips must be introduced. From time to time the drainage tube must be slightly shortened, as it is gradually pushed outward by the closing of the abscess cavity. In about forty-eight hours the poultice should be changed to a water-dressing covered with gutta-percha tissue or macintosh, and, after a few days, lint wrung out in a lotion, containing three grains of sulphate of zinc to one ounce of water, should be substituted for the water-dressing. In opening an abscess the cut should always be made at its lowest part, and the affected portion of the body placed in such a position that the matter will drain away of itself.

Chronic abscess.—Generally there is but little fever. The pus slowly works its way to the surface without any particular pain or redness, and forms a colourless swelling, giving to the fingers the sensation of fluid beneath the skin.

Treatment.—As a general rule a chronic abscess should be left closed for as long a time as possible; but when there is great pain, when the skin becomes red and tends to ulcerate, when the pus rapidly increases, or when it tends to implicate important structures, the abscess should be at once laid freely open and treated as an acute abscess.

CHAPTER V.

BANDAGING, AMPUTATIONS, ANÆSTHETICS.

BANDAGING.

BANDAGES are of two kinds, the triangular, and the roller. They are used to retain splints, dressings, fomentations, etc., in position.

The *triangular bandage*, its special uses, and various modes of application, are described upon the bandage itself. If the bandage is not at hand a large pocket-handkerchief folded, or cut across, diagonally from corner to corner will do as well. It is specially useful as a sling, and can be thoroughly recommended for holding splints and dressings in place.

Roller bandages are made of strips of calico, linen, or flannel, varying in width from ¾ inch to 6 inches, and in length from 2 to 6 yards, according to the size of the part of the body to be bandaged. The strips must be rolled up tightly and evenly. In using the roller bandage the following general rules must be observed :—

1. Place the part to be bandaged in the position it is intended to occupy after the bandage is applied ; because any subsequent alteration in position will cause the bandage to slip in one place and become too tight in another.

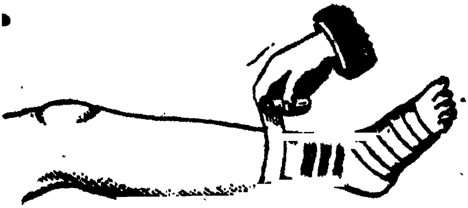


Fig. 24.
Simple Spiral Bandage.

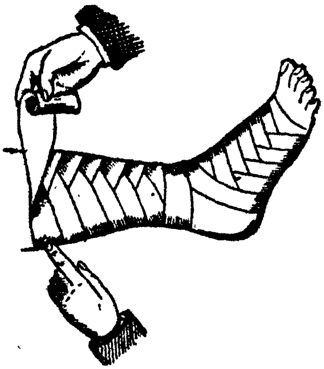


Fig. 25.
Reverse Spiral Bandage.

2. Stand in front of the part to be bandaged.

3. Hold the roller in the right hand, and lay the outer surface of its loose end against the skin, so that the roller will lie close to the part.

4. Fix the loose end of the bandage firmly by a circular turn.

5. Begin bandaging the leg or arm at the fingers or toes, and work upward.

6. Apply the bandage smoothly, evenly, and rather firmly, taking care that it is not drawn tighter at one place than at another.

There are three ways of applying a bandage, and in bandaging a limb a combination of these methods is required :—

1. *The simple spiral* consists in covering the part with a series of spiral turns, each turn overlapping two-thirds of the width of the one below. This method can only be used where the circumference of the part increases slowly, as the body, head, and just above the ankle, knee, wrist, and elbow; because when the increase is rapid, the roller will run away from the turn below, and, instead of overlapping it, will leave a space between.

2. *The spiral with reverses* (*or turns*) consists in turning the bandage back on itself each time it is carried round the limb, to prevent the formation of the spaces just alluded to. The turns should be made in a straight line, and when possible *along the front or outer side of the limb*, but not over sharp prominences of bone. When the simple spiral will go no higher without leaving spaces, place the thumb or a finger of the left hand on the lower edge of the bandage, and press it firmly against the skin; then, holding the roller in the right hand, let out 4 inches of bandage, and, allowing this to hang loosely, turn it over on itself, bringing the roller down towards the foot or hand; then draw the roller round to the right, carry it under the limb parallel to, and overlapping two-thirds of the width of, the turn below, and bring it again to the front, where another reverse is made in the same way, and so on until the simple spiral or figure-of-eight can be employed. This method is used for the foot, calf, thigh, forearm, and upper arm.

3. *The Figure-of-Eight* is chiefly used to cover joints, and consists of two loops joined together like the figure **8**, one being above the joint and one below, while the crossings lie in front of the joint. Carry the bandage diagonally across the front of the joint, round the limb above, down across the joint again in front, and round the limb below; then repeat the same, taking care that each turn is parallel to and overlapping two-thirds of the width of the turn below, until the part is covered over. The result produced is exactly the same in appearance as the reverse spiral.

This method is used for covering the ankle, knee, hand, wrist, and elbow. A variety of the figure-of-eight, called "The Spica," is used for the shoulder and groin, and consists of the two loops, the one round the body being larger than the one round the limb, the crossings lying in front as usual.

It is most desirable that every one who may at any time be called upon to perform the duties of a surgeon should make himself as proficient as possible in the application of bandages and splints by frequent practice upon healthy subjects, because, by doing so, much time is saved when an accident happens, and proper treatment can be much more efficiently carried out.

AMPUTATIONS.

Amputation is the removal of the whole or part of a limb ; and is performed in cases of severe injury and various diseases, such as mortification, diseased bone, deformity, large ulcers which refuse to heal, etc., when milder measures would prove useless or dangerous.

It is impossible here to describe the different methods of amputation required in various situations, as a detailed description would only lead to confusion in the minds of those who have had no anatomical and surgical training ; besides, circumstances alter cases, and sound common sense is usually required to decide where flaps are to be taken from, and how they are to be cut.

The chief principles of amputation are : 1, to remove the whole of the parts that are injured or diseased beyond recovery ; 2, to cut flaps of healthy skin and muscle of proper shape, and long enough to cover the end of the bone easily and loosely ; 3, to avoid all unnecessary loss of blood.

There are two chief methods of performing amputation—1, the circular, and 2, the flap.

1. *Circular*, in which a cut is made all round the limb through the skin and fat, which are to be turned back like a cuff on the upper side of the incision, then the muscles are divided down to the bone by one or more sweeps of the knife, next all the soft parts are drawn upwards toward the body, and retracted from the bone by an assistant encircling them with both hands, and lastly the bone is cleared and sawn off about three inches higher than the first incision through the skin. This operation is most useful in amputation of the arm, but not of the leg.

2. *Flap.*—This is more commonly performed than the circular. Two flaps, consisting of skin only, or skin and muscle, should be cut, one in front of the limb and one behind, but occasionally it may be necessary to cut one on

one side and one on the other. The base, or fixed part, of each flap should be equal to half the circumference of the limb at the place where the amputation is to be performed; the free ends of the flaps may be cut square or oval; and as a general rule the flaps should consist of both skin and muscle. After the flaps have been mapped out by an incision they must be dissected up to their base, the bone cleared there, and sawn through.

The instruments required for an amputation are: 1, a tourniquet; 2, a knife, whose length is in proportion to the size of the limb; 3, a strong-backed saw; 4, bone forceps, to nip off any projecting splinters of bone, or to divide small bones about the hand and foot; 5, artery forceps; 6, scissors; 7, needles; 8, catgut or silk ligatures; 9, silver wire, silk, or horsehair for sutures; 10, india-rubber drainage tube, when the amputated surface is large; and 11, sponges.

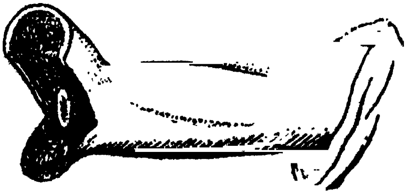


Fig. 26.
Flap Amputation.

PERFORMANCE OF AN AMPUTATION.

Preliminaries.—When possible give aperient medicine the night before the operation. Cleanse the skin where the amputation is to be performed with soap and water, followed by turpentine or a solution of carbolic acid (one part of acid to twenty of water). Have four assistants, one to give chloroform, one to attend to the tourniquet, one to hand the instruments and sponges, and one to assist the operator. Place the patient under chloroform or ether. Raise the affected limb as high as possible in the air for three minutes, rubbing it meanwhile towards the body so that the blood may drain out of it. Before lowering the limb, apply a tourniquet as near the body as possible, and ascertain, by the absence of pulsation, that the circulation through the arteries is completely stopped. See that all the instruments to be used are thoroughly clean.

Operation.—Cut a skin-and-muscle covering for the bone by the circular or flap method. Clear the bone, and, if the amputation is not performed through a joint, saw it through. This having been done, see if the covering is long enough to lie easily and loosely over the end of the bone; if it is not, more bone must be cleared and sawn off. Next examine the whole of the cut surface for the open mouths of divided arteries, especially the large main ones, seizing each one separately with artery forceps, and tying a catgut or silk ligature round it (see *Hæmorrhage*). When all vessels that can be seen have been thus ligatured, remove or slacken the tourniquet. Bleeding will now take place from the smaller vessels which could not be seen before, all of which must be seized with artery forceps and ligatured; the capillary oozing will soon cease of itself. When the bleeding has been arrested, wash the raw surface with a solution of carbolic acid (one part of acid to twenty parts of water), or with turpentine and warm water. Then unite the edges of the flaps with sutures, and when necessary insert a drainage tube from one angle of the stump to the other, leaving half an inch hanging out at each side; if no tube is used a free opening must be left for the escape of discharge. Thoroughly wash the skin, and apply a dressing of iodoform covered with an absorbent wool-pad or dry lint held in place by a roller or triangular bandage. Lastly, raise the stump on a pillow.

After treatment.—If all goes on well, the dressing should be changed in about twenty-four hours, and afterward as directed for wounds (see page 49). The drainage tube and most of the stitches may be removed about the fourth day, strips of plaster strapping being applied in place of the latter; the remaining sutures may be removed about the seventh day. Should sharp hæmorrhage be caused by any of the ligatures slipping or giving way it may be necessary to apply a tourniquet, open up the flaps, remove the blood-clot, re-ligature the bleeding point, and close the flaps as before. When this kind of bleeding is troublesome, but not excessive, injections inside the flaps of iced water, or pure turpentine, followed by judiciously applied pressure, is often sufficient without opening up the flaps.

ANÆSTHETICS.

Anæsthetics are agents used to produce insensibility; and are employed—(1) to prevent pain during surgical operations; and (2) to produce relaxation of muscles during the reduction of dislocations and the setting of fractures.

Chloroform and *ether* are the anæsthetics in ordinary use; both are administered by allowing the patient to inhale their vapour.

There is always some danger in using these drugs, and, if great care be not taken, the danger is increased when the administrator is inexperienced. Ether is the safer of the two, because it increases the heart's action, while chloroform decreases it, and occasionally produces complete failure. Chloroform is less disagreeable to take, requires a simpler inhaling apparatus, and acts more rapidly and completely than ether

The dangers of Chloroform and Ether.

1. *Falling back of the Tongue*, caused by its muscles becoming relaxed. *Symptoms*: Deep breathing and snoring; unnatural heaving of the chest; and paleness of the lips and face.

Treatment.—Seize the tongue with a pair of artery or dressing forceps, and draw it forward as far as the teeth.

2. *Closure of the valvular opening* (*glottis*) *of the wind-pipe. Symptoms:* Irregular breathing, with a crowing sound—resembling that of a child suffering from croup; and paleness of the lips and face.

Treatment.—Seize the tongue with forceps, and draw it as far as possible out of the mouth.

3. *Vomiting.*—Suffocation may be produced by the vomited matter passing into the wind-pipe.

Treatment.—Prevent vomiting by giving no food for five hours before administering the anæsthetic. If vomiting occur, turn the patient's head and body upon one side, so that the vomit may freely run out of the mouth, meanwhile continue giving the anæsthetic.

4. *Fainting.—Symptoms:* Paleness of the lips and face, with continuance of fairly natural breathing.

Treatment.—Prevent fainting by never giving chloroform or ether when the patient is in the sitting position. When fainting occurs, remove the pillow from under the patient's head; raise his legs in the air; and discontinue the anæsthetic.

5. *Failure of the Heart or Respiration.*

Treatment.—Discontinue the anæsthetics *at once.* Draw out the tongue with forceps. Commence "artificial respiration" (see page 82). Inject fifteen to sixty drops of pure ether beneath the skin of the chest with a hypodermic syringe. Apply ammonia to the nostrils, and dash cold water upon the face and chest.

General rules for administration.

1. When possible, give a purgative the day preceding administration, and allow no food to be taken for five hours beforehand.

2. Have a pair of artery or dressing forceps at hand, with which to draw the tongue out if necessary.

3. Remove artificial teeth.

4. See that the patient's garments are perfectly loose about the neck, chest, and abdomen.

5. Let the patient lie on his back, with his head raised on *one* pillow.

6. *Let the administrator never take his eyes away from the patient,* to look at what is going on around. Let him watch the pulse, the breathing, and the general appearance of the patient. If the pulse become irregular or feeble, if the breathing become gasping or sighing, or if the lips and face become pale, the anæsthetic must be discontinued *at once,* and preparations made for restoration.

7. Discontinue the anæsthetic *the moment* the patient is completely under its influence. A patient is known to have had enough:—(1) When there is no winking when the eyelid is lifted, and the eyeball touched; (2) when the muscles become relaxed, and allow the limbs when lifted to fall helplessly back; (3) when there is no flinching or movement, if the part to be operated upon be sharply pinched.

8. Keep the patient under the influence of the anæsthetic until the operation is completed, by administering occasional small quantities as required.

Special rules for administration.

Chloroform.—Pour a teaspoonful of the drug on the centre of a towel, or piece of lint, folded ten inches square; hold the towel at first about five inches from the patient's mouth and nose, and in a minute's time bring it nearer to the face, *always allowing plenty of pure air to mix with the vapour.* Do not blister the face by allowing the chloroform upon the towel to touch it. Indeed, to prevent blistering the face should be always well oiled before the inhalation is commenced. From time to time, as evaporation takes place, pour about thirty drops of the drug upon the towel.

Chloroform is a "cumulative" poison, or in other words, when a patient is fully under its influence, very little more is required to produce dangerous results. For this reason the towel must be removed the moment the patient is rendered completely insensible, and only again placed over the face for short intervals, as required to maintain complete insensibility.

Chloroform is usually well taken by children under twelve years, by old people, and by women in child-birth; and should be used for patients suffering from kidney disease, or from difficulty of breathing. Chloroform should not be used when heart-disease is believed to exist, or when there is a very feeble action of the heart.

Ether.—A convenient and cheap ether inhaler consists of a hollow cone, made of felt covered with cloth, with a small sponge pushed up into the apex. If such an inhaler be not at hand, an efficient one can be easily made by folding and pinning a towel into the form of a cone about eight inches in height, and four inches across at the open end, with a small sponge, or a plug of soft rag placed in the apex.

Pour four teaspoonfuls of ether upon the sponge and side of the cone; hold the wide opening of the cone over the patient's mouth and nose, allowing air to mix freely with the vapour at first, but when the patient becomes more accustomed to the disagreeable effect, press the edges of the apparatus firmly against the face, so that as little air as possible passes in. An inspiration of pure air should be allowed about once in a quarter of a minute. Pour two teaspoonfuls more of ether into the cone from time to time as evaporation takes place.

The chief danger of ether is failure of the respiration; should this occur, the administration must be discontinued at once, and artificial respiration resorted to (see page 82). Ether should be used in the majority of ordinary cases, and especially in those where disease or enfeeblement of the heart exists. It should not be employed in cases of disease of the lung or kidney.

Treatment after administration.

When the operation is concluded, the patient must be allowed to quietly sleep off the effects of the anæsthetic; but should he pass during recovery into a state of transitory excitement, no alarm need be felt, and all that should be done is to prevent him from injuring himself in any way. Disagreeable vomiting, which not unfrequently occurs, is allayed by washing out the stomach with a copious lukewarm water emetic, by giving small pieces of ice to suck, and by applying a mustard-plaster to the pit of the stomach. The vomiting is usually caused by the vapour of the anæsthetic being absorbed by the saliva, which, when swallowed, irritates the stomach.

CLASSIFIED LIST OF REMEDIES

MENTIONED IN PRECEDING PAGES, WITH ADDITIONAL SUGGESTIONS FOR THE

MEDICINE CHEST.

NAME.	PROPERTIES.	REMARKS.
ACONITE (Valoid Fl. Ext.)	Lowers pulse, produces sweating, and relieves facial neuralgia.	In all inflammatory disorders, sore throat, fevers, it may be given in doses of 1/8 to 1 drop in water ; may be added to fever mixture ; locally it relieves neuralgia, earache, etc.
AMMONIUM CARBONATE	Stimulant and Alkali	Very soluble in water, neutralizes acid in stomach in doses of 5 grains one hour before meals ; useful in states of exhaustion, 5 grains every hour or two. It may be used as a local application in insect bites, and injected in strong solution hypodermically in snake-bite.
AMMON. CHLOR. TABLOIDS 5 grs.	In congestion of liver, neuralgia, and headache	For bronchitis, or bronchial catarrh, one of the small Tabloids may be allowed to dissolve slowly in the mouth, every two or three hours. In neuralgia ten to thirty grains may be given three or four times a day with half a wineglass of water. Used in biliousness.
ANTI-CHOLERA TABLOIDS— (Cotoin 1/2 gr., Cocaine 1/10 gr., Calomel 1/10 gr., Myrrh 1 gr., Capsicum 1/50 gr., Camphor 1/6 gr.)	The most recent and successful treatment of Cholera, Diarrhœa, etc. Opium may also be given in the first stage of cholera.	Dose—One every 15 or 30 minutes in water, according to urgency of the symptoms, until vomiting ceases. They may be first crushed if so desired. Use alone in the 2nd stage, and in collapse stage inject Corrosive Sublimate 1/20 gr. and Cocaine 1/6 gr.
ANTIPYRIN	Febrifuge. Most successful in headache from any cause.	Fifteen or 20 grains taken before temperature reaches 100° will often break up hot stage of intermittent fever. Effects last many hours. Second (daily) dose should be less. Sometimes nauseates on empty stomach. Relieves pain of rheumatism (acute), and painful menstruation.
ARSENIC TABLOIDS, 1/50 gr.	Tonic and anti-malarial, anti-neuralgic.	Poison in large doses. Best in combination with other tonics. Useful in sequences of malarial fever, neuralgia, enlarged liver and spleen, and chronic indigestion.
ATROPIN (See Hypodermic Tabloids)	Anti-neuralgic, anodyne and febrifuge (Poison.).	Dose should be seldom more than 1/100 grain. Specific effects known by dilated pupil of eye, flushed face, and dry throat. Must not be often repeated in one day.
BI-CARBONATE OF SODA TABLOIDS	Useful in all cases requiring an anti-acid.	The value of alkalies, and especially of the bi-carbonates of Soda and Potash, is very fully understood. In a very large class of cases, indigestion, flatulence, heartburn, and colic are due to an excess of acid in the stomach ; and this condition usually constitutes an important element in gout, rheumatism, and gravel.

NAME.	PROPERTIES.	REMARKS.
BISMUTH SUBNIT. TABLOIDS, 5 grs.	Tonic, anti-nauseant, local stimulant	Very useful in acid stomach, heartburn, weak digestion, diarrhœa and dysentery. May be sprinkled on raw and ulcerated surfaces. Large doses harmless.
BUCHU (Valoid Fl. Ext.)	Diuretic	Used chiefly for its action on the urinary organs, as in catarrh of the bladder, and irritable conditions of the parts. Dose—½ to 2 teaspoonfuls.
CALOMEL	Alterative and stimulant to abdominal glands	This is alterative, purgative, and in large doses sedative. It produces biliary stools. One-sixth grain every 30 minutes relieves nausea, and in dropsy acts on the kidneys. It is especially useful in bilious and malarial conditions as a purgative. Employed as an ointment in skin diseases. Dose—One to five grains.
CALOMEL WITH PIPERINE	Alterative and stimulant to abdominal glands	Remarkable stimulant of stomach in cholera. Useful in chronic dysentery, in lessening mucous discharges.
CALOMEL WITH IPECAC.	Alterative and stimulant to abdominal glands	Less stimulating than the preceding, and more laxative. Appropriate to acute forms of Dysentery.
CANTHARIDAL COLLODION	Blistering fluid	To be painted on very lightly with a feather when simple counter irritation is required. When it is desired to raise a blister, paint on two applications the size of blister required and apply a poultice over the application.
CARBOLIC ACID, 90 °/o (Saturated Solution)	Caustic, stimulant, local anodyne, anti-nauseant, antiseptic	A drop or two (strong) injected into a snake-bite may neutralize poison. A teaspsoonful in a "night stool" will disinfect contents. One drop may be taken in 2 tablespoonfuls of water for nausea, or fermentation in stomach. Dilute with 30 parts of water, to apply to insect bites.
CASCARA SAGRADA TABLOIDS 2 gr. Extract in each.	Cascara is a tonic aperient, much prescribed in constipation; it does not gripe or irritate the stomach	Dose—One or more Tabloids swallowed with water.
CASTOR OIL	Laxative	Is unirritating, and most sure to cleanse out bowels of all disturbing matters quickly. Take a mouthful of lemon juice before and after the dose.—Dose Two tablespoonfuls for speedy action.
CATHARTIC, COMPOUND, U.S.P.	Cathartic (mercurial)	One of the most certain of cathartics, having "antibilious" properties.
CHLORAL HYDRATE	Hypnotic and antispasmodic	Ten grains, (rarely 20) will induce refreshing sleep. Dissolved in plenty of water, in 10 grain doses, it has been injected under the skin for cramps in cholera.
CHLORODYNE	Five to 15 drops	To relieve any internal pain; given in cholera in early stages, diarrhœa, dysentery, cramp, colic, etc.
CHLOR. POT. & BORAX TABLOIDS	....	Used in affections of mucous membrane of mouth, and for voice and throat. Should be slowly dissolved in the mouth as often as required.
CITRIC ACID	Antiseptic, refrigerant, diuretic	This is very agreeable. Ten grains to half-teaspoonful may be dissolved in a glass of sweetened water.

Name.	Properties.	Remarks.
COLCHICUM (Valoid Fl. Ext.)	....	Considered a specific remedy for acute gout, and all forms of disease occuring in gouty subjects. Dose—Two to five drops.
COLLODION	For cuts, etc., as a protective dressing	It quickly dries, forming a thin film over the part on which it is painted.
COMPRESSED CAMPHOR	Diffusible stimulant	May be given in fainting, exhausted conditions, and depression. Used in water for sponging surface of body. Useful in diarrhœa. To make Essence: dissolve 1 part camphor in 9 of rectified spirit, or whisky. Dose.—Ten to 30 minims.
CREAM OF TARTAR (Bitartrate of Potash)	Refrigerant, diuretic	For adding to drinking water. When pure, a teaspoonful added to a glass of lemonade or water acts on the kidneys. A tablespoonful will operate on the bowels. Must be stirred, not being readily soluble. Not to be used during diarrhœa or typhoid fever.
DIALYSED IRON	Antidote to Arsenical poisoning Restorative & blood tonic.	This is indicated wherever the patient is pale and weak. It is especially serviceable in heart disease, Bright's disease, female derangements, diptheria, and all wasting conditions. Invaluable in arsenical poisoning. Dose.—Ten drops five times daily, in water or other liquid, or on a lump of sugar.
DOVER'S POWDER (Opium & Ipecac.)	Sedative (opiate), anodyne, sudorific	Very useful in abdominal pain, diarrhœa, etc. Well borne in fevers as a sedative, as it induces perspiration. Often breaks up cold in the head, with quinine (gr. v.)
ERGOT (Valoid Fl. Ext.)	Hæmostatic, contracts womb	Ergot is used to check hæmorrhage from the lungs, nose, womb, etc., and to induce contraction of the womb before and after delivery. It is also given in diabetes insipidus, in which the arteries of the kidneys are dilated. Dose.—From ten drops to a teaspoonful.
EUCALYPTINE	Antiseptic, anti-malarial, local stimuant	A useful application to bruises, wounds, and venomous bites. Said to be "good in intermittent fevers in doses of 5 or 10 drops four times a day, when quinine has failed. Also recommended for flatulence, chronic cough, and chronic affections of the bladder.
GLAUBER'S SALT (Sulphate Soda)	Refrigerant laxative	Quick and efficient in emptying the large bowel. Dose.—One heaping teaspoonful in a full glass of water in the morning. Much more may be taken. Not to be used in diarrhœal tendencies.
GLYCERINE	Solvent, local sedative	Added to water, it soothes inflamed surfaces, as skin, rectum, throat, and even stomach in dyspepsia. Excellent vehicle for turpentine. Very rarely it does not agree with skin.
HAZELINE	Anodyne (local), styptic, sedative, refrigerant	Useful as an injection, or local application in dysentery and piles, or applied to bruised surfaces upon feet or elsewhere. Diluted with equal parts of warm water, it soothes in inflammation of eyes and catarrhal troubles. For internal hæmorrhages, a teaspoonful may be given with water every hour.

NAME.	PROPERTIES.	REMARKS.
IODINE CRYSTALS	Alterative, resolvent, counter-irritant	Tincture is largely used, in full strength, as an injection into bites of venomous serpents. To make Tincture, dissolve 12 grains in 1 oz. of spirit.
IODOFORM	....	Used principally as an application to ulcers, for which it is excellent. May be applied in powder or ointment.
IPECACUANHA	Emetic, expectorant, anti-dysenteric	Twenty grains, repeated every twenty minutes, will cause vomiting. Stomach soon acquires tolerance of it. Tropical dysentery is much relieved by large doses of it preceded by opium. As an expectorant for coughs, 2 grains (½ of one Tabloid) every four hours.
LANOLINE	Basis for ointments	Largely employed in affections of the skin, various medicinal agents being incorporated with it.
"LAXATIVES"	Mild laxative (non-mercurial)	Very useful where powerful cathartics are contraindicated. Prescribed for biliousness, headache, indigestion, costiveness, rheumatism. Dose—One to three. They do not gripe.
LEAD AND OPIUM TABLOIDS	Anodyne and astringent	In obstinate diarrhœa or dysentery. One every six hours.
LIVINGSTONE'S ROUSERS	Cathartic, antiperiodic	A celebrated remedy when first warnings of malarial fevers have appeared.
MERCURY, RED IODIDE OF	Local irritant and resolvent	As an ointment, (13 grains to the ounce of lanoline or lard), it is very useful over enlarged liver or spleen.
MORPHINE, 1/8 gr. (*See Leaflet on Hypodermics*)	Anodyne, sedative	For every kind of pain, it may be given by mouth, hypodermically, or by enema ; it is useful for diarrhœa and dysentery, and nervous disorders from sunstroke. Very soluble in water.
MUSTARD	Rubefacient........	As an emetic, take one teaspoonful stirred in a glass of warm water It is used as a plaster over the stomach for nausea, or for pain, or as a stimulant over neck and spine in cholera, or as a relief for congested lungs.
NUX VOMICA (Valoid Fl. Ext.)	Nerve tonic, cerebral stimulant	Used for pain in stomach, mental depression, muscular exhaustion, and nervous debility.
OPIUM AND CAMPHOR	Anodyne, stimulant, astringent	Most useful in diarrhœa, of a bilious character, and in chronic, not acute, dysentery.
OPIUM TABLOIDS 1 gr.	Anodyne, astringent narcotic	These will relieve all kinds of pain. The dose is from one to three tabloids, which should not be repeated oftener than every hour before pain is relieved, and every three hours after it is relieved.
PEPTONIC TABLETS	Digestive..........	Prescribed in indigestion, flatulence, dyspeptic headaches, etc. Dose.—One Tabloid after meals. Recommended after food when the stomach is enfeebled in cholera, wasting diseases, fever, etc.
PEPTONIZING POWDERS (Fairchild)	Digestive..........	Employed to predigest milk for patients in fevers and diseases of bowels. Milk thus peptonized cannot curdle, and is ready for immediate absorption.

NAME.	PROPERTIES.	REMARKS.
PILOCARPINE, 1/10 gr. (*See Leaflet on Hypodermics.*)	Sudorific, febrifuge	For hypodermic use, though it can be given by mouth. Produces free sweating, and causes free flow of saliva. Breaks up paroxysms of intermittent fever.
POTASS. IODIDE TABLOIDS	Alterative, resolvent, anti-syphilitic	Given in glandular swellings, syphilis, rheumatism, etc.
QUININE	Anti-malarial tonic The taste may be covered by enveloping in tissue paper and swallowing with water.	Cures all malarial fevers. Is considered an excellent preventive. Admirable tonic in combination with other remedies.
QUIN., ARSENIC, & STRYCHNINE	Anti-malarial tonic	Powerful tonic in convalescence from malarial fevers, and in debility. Acts better when bowels are not confined.
RHUBARB AND SODA	....	An excellent cathartic, producing natural movements. Good to clear bowels in beginning of diarrhœa, and for children.
SACCHARIN TABLOIDS 1/2 grain each.	They possess 300 times the sweetening power of sugar, and are especially useful for diabetic patients.	One of the Tabloids is sufficient to sweeten a cup of tea or coffee. May be used in preparing foods instead of sugar. Are neither food nor medicine.
SODA-MINT	Carminative, anti-acid	Excellent for acid and flatulent stomach.
SODA SALICYLATE TABLOIDS	Anti-pyretic........	Prescribed in acute articular rheumatism and to lower temperature in fevers. Dose.—One to three. Used for rheumatism, typhoid fever, pyæmia, septicæmia, puerperal fever, quinsy and diphtheria. Dose 1 to 3 3-gr. Tabloids.
SULPHURIC ACID (*Handle with Caution.*)	....	For medicinal purposes, dilute ½ drachm of this with one-third pint of water ; do not use till it cools and settles.
TANNIN	Astringent	Most valuable in internal hæmorrhages from lungs, bladder and bowels. Ten grains every hour or two.
TINCTURE MUR. IRON	....	Prescribed largely in diphtheria, anæmia, chronic diarrhœa, erysipelas, and externally to stop hæmorrhage.—Dose 10 to 30 drops in a little water.
TURPENTINE (Rectified)	Balsamic, stimulant	Requisite for the inflamed glands of the bowels in typhoid fever. May be used externally like mustard plaster on flannels wrung out of hot water. Sometimes affects bladder.
WARBURG'S TINCTURE	Anti-malarial	Noted remedy for breaking up malarial fever. Consists of quinine and strong spices.
WHISKEY	Stimulant..........	Given hypodermically in collapse of cholera, or depressed stage of fevers, in typhoid fevers and heat exhaustion; also used in food preparations. as milk punch, " egg nog," &c.
ZINC SULPHATE		Useful as an eye-water, 1 gr. to ounce of water, and for leucorrhœa and gonorrhœa.
ZYMINE (Fairchild)	Digestive	For predigesting different foods for invalids and infants.

NOTE.—The Tabloids of Bicarbonate of Soda will be found most useful in peptonizing foods with Zymine.

Hypodermic medication should ordinarily be conducted by a Physician, or under a Physician's instruction.

Hypodermic Medication.

NOTES ON ALKALOIDS, BY A PHYSICIAN.

(THE TABLOIDS MAY BE GIVEN BY THE MOUTH AS WELL AS HYPODERMICALLY).

ACONITIN TABLOIDS, 1/260 & 1/130 Gr.

Aconitin is specially effective in facial neuralgia. One of the tabloids may be quickly incorporated with a little Lanoline, and rubbed into the skin over the painful part, or applied "for itching and pain," whether due to neuralgia or inflammation. Aconitin is prescribed in "toothache," intercostal neuralgia, and neuralgia accompanying shingles. It may be dissolved in water and painted on the part. It is intensely powerful, and *should seldom if ever be injected hypodermically.*

ALOIN TABLOIDS, 1/4 Gr.

Aloin is an excellent agent to unload a congested liver.

APOMORPHINE TABLOIDS, 1/10 Gr.

Apomorphine "is the most useful of all the emetics for narcotic poisoning" (Bartholow). "Its action is not followed by nausea or prostration" (Whitla), and it is very useful in a stomach loaded with indigestible food. Rossbach says of it in inflammations, "It is only since I learned the excellent effects of apomorphine that I can say I really like to treat catarrhs even of the most obstinate kind, and no longer, as before, approach the cases with a sense of therapeutic powerlessness." In a child or an inebriate a very large dose may cause unpleasant symptoms.

ATROPIN TABLOIDS, 1/150, 1/100 & 1/60 Gr.

* * * "The principal triumphs of atropin over neuralgia have been in cases of *sciatica.* It is now admitted that atropin is one of *the best remedies for this* disease" (Bartholow), but to obtain the best results the fluid should be *injected deeply* into the neighbourhood of the affected nerve near the buttock. *For pelvic pains Anstie has shown that hypodermics of atropin are unequalled.* In the night sweats of consumption, etc., a few injections are often so efficient as to render further treatment unnecessary (Murrell). The drug is highly spoken of in asthma. "*That troublesome disorder, spermatorrhœa,* is most successfully treated by the hypodermic injection of atropin" (Bartholow). It is also recommended in sea-sickness and ptyalism. Flaxen-haired women are specially susceptible to atropin.

CAFFEIN TABLOIDS, 1/2 Gr.

Caffein has been much used hypodermically in malarial neuralgia. It has been given hypodermically with success in hysterical headache (Lorent), and the sleeplessness (insomnia) of chronic alcoholism without delirium (Anstie). It sometimes relieves nervous headaches in a marvellous manner (H. C. Wood). It is a powerful diuretic in dropsy.

COCAINE TABLOIDS, 1/10, 1/6 & 1/2 Gr.

"One-quarter of a grain of Cocaine injected into the neighbourhood of buboes, inflamed bursæ, small tumours, abscesses. etc., permits them to be painlessly dealt with" (Whitla). A solution in the eye of ½ gr. of Cocaine to 12 minims of water will allow an operation for cataract, and a solution of 1 gr. to every four drops, painted twice on the nasal mucous surface, permits the application of the actual cautery without pain.

A very excellent way is to incorporate one or more tabloids in Lanoline, and rub it into the skin, when it soon removes sensibility.

"Cocaine solutions are liable to change, and a fungoid growth is apt to appear in them" (*Medical Annual*). The Hypodermic Tabloids are stable. One of them introduced into the cavity of an aching tooth will relieve the pain effectually.

CODEIN HYPODERMIC TABLOIDS 1/2 gr.

As codein expends its force upon the nerves of the viscera, whose irritability it lessens in a remarkable degree, "it has been given with advantage in sleeplessness caused by pain in some paripheral regions, and in nausea, where 2 to 4 grains may be given every 4 or 6 hours till sleep is produced" (Whitla). "It has been strongly recommended in nervous insomnia, and also in cases where sleep is prevented by the pain of rheumatism or cancer, or by distressing cough" (Brunton). It is a great remedy for diabetes.

COLCHICINE TABLOIDS, 1/100 Gr.

For gout, rheumatism, etc. (See "Practitioner," Vol. xxiii., p. 400).

CURARE TABLOIDS, 1/12 & 1/6 Gr.

For hydrophobia, convulsions, tetanus, chorea, strychnine poisoning, paralysis of motor nerves. NOTE.—It will be observed that this drug is only to be used in certain extreme cases.

DIGITALIN TABLOIDS, 1/100 Gr.

"The two most marked effects of digitalis are a *reduction in the rate of the pulse and an increase in the amount of urine*" (Brunton). "The irregularity of the pulse is the capital indication of the necessity of giving digitalis" (Ringer). "If no dropsy be present, digitalis will not notably increase the quantity of urine" (Phillips).

ERGOTININ TABLOIDS, 1/150 & 1/300 Gr.

Prof. Eulenberg says of the Ergotinin in these Tabloids:—"I administered it in vaso-motor neuroses, special cephalgiæ, hemicrania, Basedow's disease, and in cases of paralysis of the bladder. I can say this much: that subcutaneous injections of your Ergotinin in doses of 1/300 to 1/60 of a grain show great advantage over the injections of Extract of Ergot." Dr. Murrell found that in hæmorrhages from the lungs in consumption one injection usually sufficed to check the bleeding for four days.

M. Tarnier states that the results of the hypodermic injection of Ergotinin were so favourable in the Maternité de Paris, as to give the drug absolute precedence over Ergotine.

HOMATROPIN.

(Oxytoluylic-acid-tropine).

According to Fronmuller (Memorabilien, 1880, p. 298, 1882, p. 6.) homatropin is devoid of the toxic principles of atropin, but Ringer finds that like atropin, it paralyses and tetanizes; a two per cent. solution is said to quickly dilate the pupil, which regains the normal size within twenty-four hours. It is also unirritating. By it "cough, expectoration and insomnia are relieved" (Currie), but in general diseases it is not so useful as atropin.

HYDRARG. PERCHLOR. TABLOIDS, 1/60 & 1/130 Gr.

(Corrosive Sublimate).

This is "the preparation of mercury that has especially been employed subcutaneously, and usually in aqueous solution, on accouut of its solubility" (Ziemssen's *Therapeutics*). It has been employed considerably in syphilis. Where it is desired "to produce a local caustic action," a strong solution must naturally be used: *e.g.*, "Bienfait of Rheims used in the carbuncles of anthax (as an injection into the œdematous eyelids) an alcoholic solution of 1 to 5; Luton, some drops of an alcoholic solution of 1 to 30; Dominguez, 20 to 80 drops of a 10 per cent. solution in elephantiasis Grœcorum" (Ibid). As much as 1/6 gr. is said to be an ordinary dose by some German authorities, though this certainly seems *excessive.* The usual dose by the mouth is 1/16 gr.

HYOSCYAMIN TABLOIDS, 1/80 & 1/10 Gr.

In psychoses (mental affections) with high motor excitement, Hyoscyamin is "the most rapid and reliable narcotic we possess" (Prideaux). "It produces sleep in mania more certainly even than chloral, and without bad after-effects" (Seguin). According to Oulmont it "cures nervous trembling when all other treatment has failed." "It is valuable during dentition and in convulsions, its properties being such as alleviate pain and subdue irritation" (Phillips). It is given to induce sleep when opium disagrees, and does not constipate (Ringer). It is highly praised as an antispasmodic (Oulmont). (1/10 gr. is an exceptional dose).

HYOSCINE TABLOIDS (1/200 and 1/75.)

"Hyoscine, the second alkaloid of Hyoscyamus, is a powerful cerebral sedative. "It is of great service in the treatment of delirium, excitement and insomnia, alike in insanity and other diseases" (Currie), proving useful in the delirium of pneumonia, cardiac and renal disease, epileptiform convuland chorea.

MORPHINE TABLOIDS (1/8 gr.)

To produce sleep or relieve pain morphine is the most powerful agent we possess, and has been called the "gift of the gods." The dose settled upon should not be repeated sooner than in twenty minutes. In cases of neuralgia one hypodermic injection of morphine will often effect a cure.

PHYSOSTIGMINE (ESERINE) TABLOIDS, 1/100 Gr.

(THE SALICYLATE.)

Dr. Von Wecker states that Eserine is a most powerful antiseptic, preventing the formation of pus in suppurative diseases of the cornea, and after cataract operations when the cornea or iris shows a tendency to suppuration. It is recommended in presbyopia (far sightedness) ocular neuralgia, and painful corneal ulcers and wounds. As it lessens intraocular tension, it is used in glaucoma * and staphyloma. †

"It removes dilatation of the pupil and paralysis of accommodation, after the use of atropin, and used alternately with atropin, breaks down adhesions after iritis" (Brunton). It is prescribed in tetanus, (spasmodic contractions of voluntary muscles), strychnine and atropin poisoning, general paralysis of the insane (Crichton Brown) and mania; in paraplegia, and locomotor ataxia (Brunton); in constipation due to intestinal muscular atony, and in bronchitis, catarrh, and dyspnœa due to bronchial weakness (Ringer). It is given in chorea, and the night-sweats of consumption.

PILOCARPINE TABLOIDS, 1/10, 1/3 & 1/2 Gr.

The effects of Pilocarpin in solution are not so constant as when injected (Whitla). So powerful and certain is its diaphoretic action, that it has already taken rank as the most reliable and influential of the remedies of its class (H. C. Wood). It may be rubbed into the skin with Lanoline to produce local sweating. It often shortens the hot stage of intermittent fever, and is of great service in puerperal albuminuri; it frequently averts a cold.

QUININE TABLOIDS (SOLUBLE).

Quinine has often been given subcutaneously in sunstroke and topical fevers. Injections of it are apt to prove somewhat irritating, but where they are indicated these Tabloids will be found the most eligible pre there is.

STRYCHNINE SULPHATE TABLOIDS.

1/150, 1/100 & 1/60 Gr.

In cases of paralysis, to "be capable of regenerating at once the lost muscular power, "Strychnine must be administered hypodermically." It should not be administered in acute but in chronic cases only. It is useful in gastralgia, paralysis of the bladder, etc.

SCLEROTINIC ACID TABLOIDS, 1/2 & 1 Gr.

(ACTIVE PRINCIPLE OF ERGOT.)

According to M Marckwald, Sclerotinic Acid acts more violently on the uterus than Ergotinin, and lowers arterial pressure.

"In mammals the acid accelerates the intestinal peristalsis, and excites contraction both of the pregnant and non-pregnant uterus, pre-existing contractions being intensified so that the organ assumes a paler tint. Nitikin has not observed any poisonous effect on the fœtus in utero. . . . . It is a much less powerful poison than most of our official alkaloids" (MEDICAL TIMES & GAZETTE, Dec. 6th 1876).

Sclerotinic (or Sclerotic) Acid contains Ergotinic Acid.

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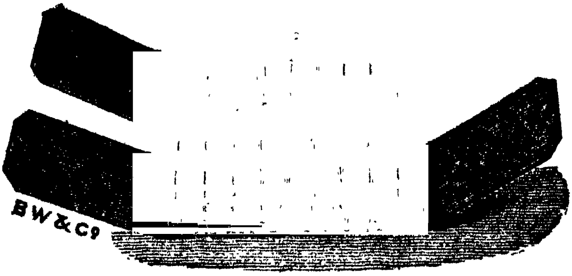
* Glaucoma [from the Greek γλαυκός, "bluegreen," also light gray] is defective vision from opacity of vitreus humour (or the liquid contents of the eye). "It is properly applied to all the conditions which are produced by heightened arterial tension or increased fluid pressure within the eyeball" (Thomas).

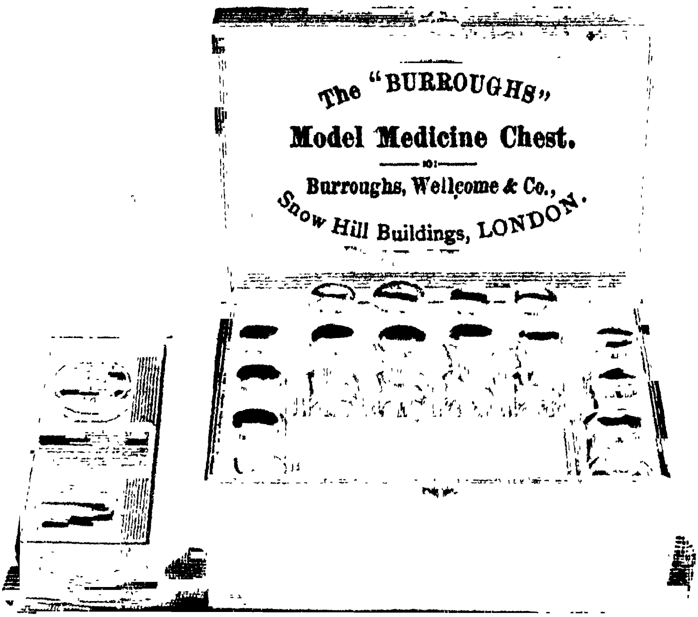
† Staphyloma [from the Greek σταφυλή, a "grape,"] a disease of the eyeball, in which the cornea loses its transparency, rises, and even projects beyond the eyelids like a small tumour, somewhat resembling a grape (Ibid).

No 17.—POCKET CASE.



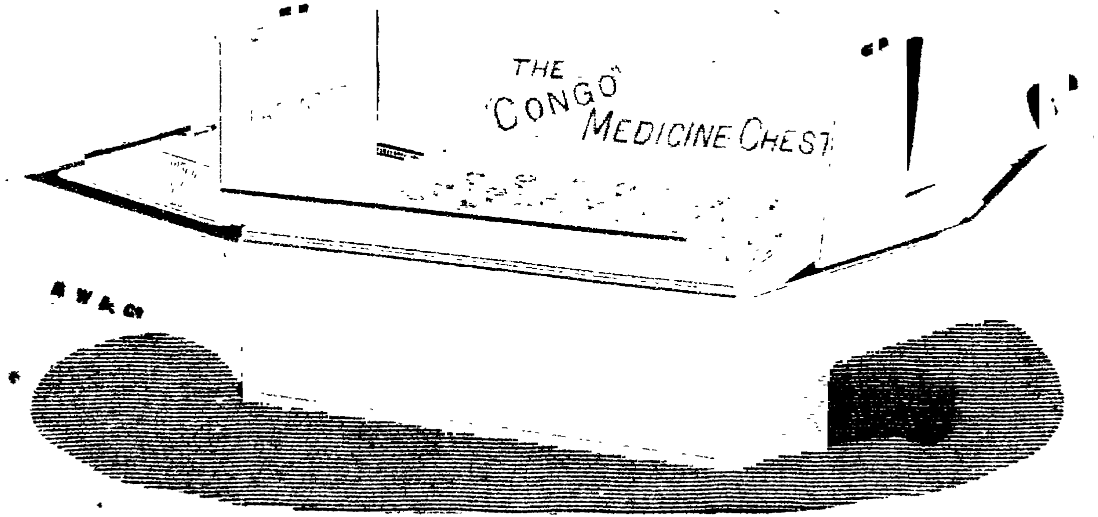
Flexible, fine Calf, two pockets, containing sixteen 3-dram vials. PRICE—Empty, 16/-; filled with good assortment of Tabloids, etc. and "Travellers' Guide," 30/-.

"MODEL" MEDICINE CHEST.


The "BURROUGHS"
Model Medicine Chest.
Burroughs, Wellcome & Co.,
Snow Hill Buildings, LONDON.

Polished Mahogany, very handsome, containing fourteen 2-oz. stoppered bottles, two stoppered blue bottles for poisons, two ointment ars, powder boxes, measuring glass, and space for sundries. PRICE—Fitted complete and with "Travellers' Guide," 80/-; chest and bottles only, 30/-.

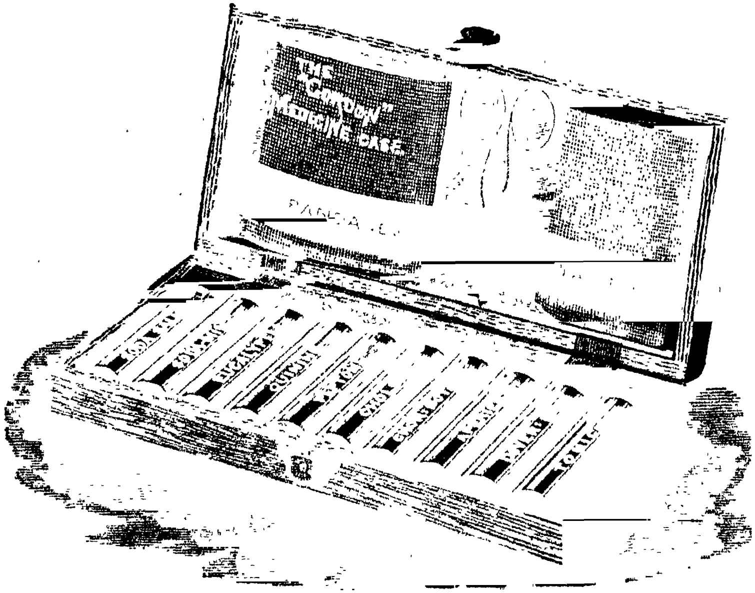
"CONGO" MEDICINE CHEST



Strong Metal, containing forty 2-ounce bottles, n moveable wooden tray with covers; fitted with partitions for instruments, etc. Size: 16 by 11 by 9in. PRICE—Without medicines 50/. With compressed and other medicines, instruments and Travellers' Medical Guide," etc., according to list, £7 to £20. **Weight of Chest about 40 lbs.**

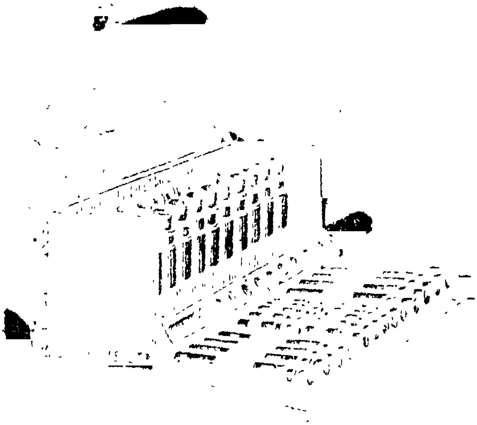
The "Congo" Medicine Chest is also supplied in either leather or teak-wood as may be desired.

“GORDON” MEDICINE CHEST.



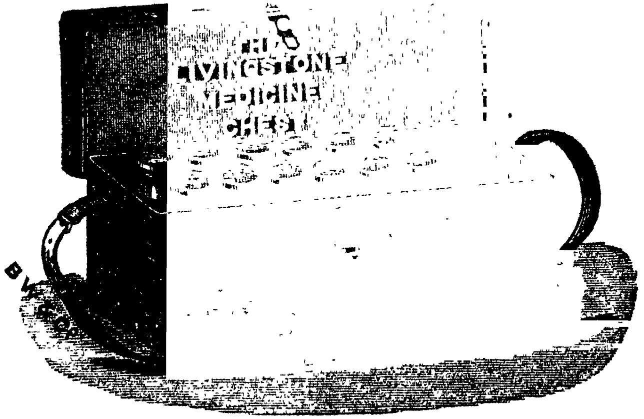
This is a beautiful, compact and durable medicine case, containing 12 bottles filled with Tabloids of compressed drugs, etc., for immediate use. They obviate the possibility of the mistakes incident to weighing and measuring, as they are compressed or otherwise prepared in uniform doses. PRICE—12/-. Large size, 20/-, with “Guide.”

No. 19.—CARRIAGE OR HAND BAG.



Morocco. Very compact and well protected, containing eight 1½-oz. stoppered, ten 1-oz., twelve 6-dram, eight 4-dram, five 2-dram corked vials, and 12 tubes of Hypodermic Tabloids. The rows of vials are arranged to fall and show all the labels. Size, 11½ by 5¼ by 6 inches. PRICE—Empty, 48/-; fitted complete with Hypodermic Tabloids, Syringe, Bandages, Instruments, and usual list of Tabloids, with Guide Book, 120/-.

LIVINGSTONE" MEDICINE CHEST.

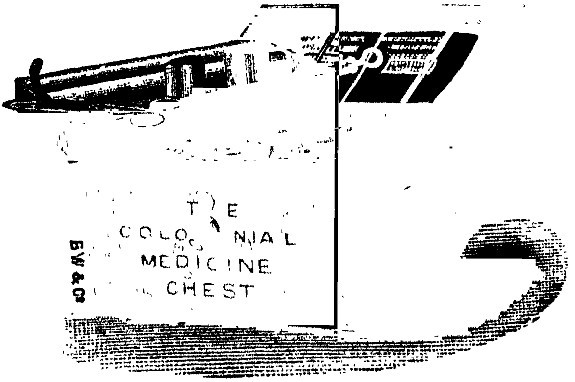


Raw Hide, containing twelve 4 oz. bottles. Fitted with leather strap for convenience of carrying. Very suitable for missionaries and travellers. Size: 11 by 7 by 4 inches. Price—Empty, 30/-. Fitted with medicines, instruments, and "Guide," from £4. A smaller size, containing 2-oz. bottles, empty 25/-, fitted from £3.

[illegible] CHEST.

(ORNAMENTED METAL OR TEAK WOOD).

Missionaries' Teak-wood Medicine Chest.



Furnished Complete, 70s. For Stations and Expeditions.

This is especially designed for emergencies and family use. Besides being furnished with 16 one-and-a-half ounce bottles, and 4 three-quarter ounce bottles containing compressed and other drugs—those most commonly required by physicians and families—it has surgeons' bandages, scissors, lancet, needles and silk, adhesive, court, and mustard plasters, catheter, absorbent cotton, wound pad, etc. For physicians, missionaries, travellers, explorers, and use on board ship, these chests will be found to fill many an important want. PRICE—Fitted complete with leather strap for convenience of carrying, glass bottles, 50/-, tin bottles 70/-. Chest and bottles only, 10/-.

NOTE.—All the Medicine Cases and Chests can be fitted with Tabloids of compressed drugs, etc., according to order. Any of the above may be ordered of Burroughs, Wellcome & Co., Snow Hill Buildings, London, or through any chemist or wholesale druggist.

Extract from "The Congo Free State."

BY HENRY M. STANLEY.

"Observe the strictest temperance. Drop all thought of tonics, according to the rules of 'west coasters,' 'old traders,' 'African travellers,' or your own self-deceiving fancies. If your are in absolute need of a tonic apply to the doctor, or to the simple rule of never during daylight taking more than one ounce of any liquor or wine. Your best tonic would be 2 grains of quinine as compressed in Tablets by Burroughs & Wellcome, of Snow Hill Buildings, London. These chemists have prepared drugs which I can conscientiously recommend as adapted for tropical regions. They have prepared small doses in tablets of nearly every medicine that may be required, which may be taken without creating nausea, a valuable desideratum, as all will admit who have suffered from the foul nauseating smell of medicines as commonly prepared by druggists. If thirsty, at a station or factory, prepare a glass of sherbet. If marching, drop a Compressed Tablet of aciduous powder* as preprepared by these chemists, in your cup of water."

* * * * * *

"Obtain your medicine pure and well-prepared. Messrs. Burroughs & Wellcome will equip you with tropic medicines in chests or cases, with supplies to last you one month or ten years. They have sought the best medical advice, and really seem disposed to study the special needs of the East, West, Central, Northern, or Southern African traveller, soldier, trader and missionary. I have informed them of a few diseases such as have fallen under my observation, and they have prepared such medicines as have been tried during the last seventeen years of my African experiences."

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* Citric or Tartaric Acid or Cream of Tartar answers same purpose.

SALOL.

(*SALYCYLATE OF PHENOL.*)

$C_{13}H_{10}O_3$

Supplied in bottles of 100 at 6s. each.

Salol may be said to be composed of sixty per cent. Salicylic acid and forty per cent. Carbolic acid. Insoluble in the gastric juice, it is stated to dissolve readily in the intestinal secretions after admixture with the pancreatic flow. It is tasteless.

THERAPY.—Salol is useful in catarrh of the bile-ducts and gall-bladder. It is said to be a valuable agent to lower fever, as it does not derange the stomach and is easy to take. The following is from Bartholow's Mat. Medica :—

The first triumphs of Salol were won in the treatment of acute *Rheumatism*, excelling, as it apparently does, all other remedies in its power to abate pain and lessen fever. If all the conditions be propitious, by the end of the second or third day fever and joint-pain and swelling will have disappeared.

[Herrlich gave Solol in 30 cases. "The acute articular rheumatism rapidly yielded to the Salol, but the chronic muscular rheumatisms also were relieved or cured by the treatment."—*Year Book*.

Billschowski quickly cured 19 out of 27 cases, and concludes that it is "a specific in acute articular rheumatism."

Kleefeld has used Salol in the treatment of 35 cases of rheumatism and neuralgia, with the best results, and with no ill-effects.—*Year Book*]

"It is now quite certain that Salol and other remedies of the same class have the power to relieve the pains of *locomotor ataxia* in a remarkable degree. This fact is the more interesting because heretofore only the ordinary anodynes were available for this purpose. Recent experiences have brought to light, also, that the antiseptics—chinoline derivatives—have analgesic power of a peculiar kind, in that they afford remarkable relief in painful affections due to a pathological condition of the peripheral nerves, such as that present in locomotor ataxia, neuritis, etc. In this group we may include the cases of genuine *migraine*, and that large and indeterminate class, called *rheumatic*, of which *lumbago*, *sciatica*, and *myalgia* are representatives. The dose for these purposes will be from three to ten grains, three or four times daily.

[If what is alleged of Salol be further substantiated, it gives promise of being useful in diagnosis. Prof. Ewald (*Deutsch Medizin. Zeitung*, No. 52, 1887) gave Salol in 39 cases to ascertain the normal period of its appearance in the urine. The reaction was as follows :—

In 1 case, after 30 minutes.
,, 32 cases ,, 45 ,,
,, 6 ,, ,, 1 hour.

Cases in which the reaction takes place after the lapse of an hour may safely be considered pathological—perhaps gastric dilatation, for example.]

"The topical applications of Salol are deduced from its physiological actions."

Dose.—The Tabloids contain 5 gr. each. The dose is from one to three.

ANTIPYRIN.

TABLOIDS AND CRYSTALS.

Tabloids supplied in bottles of 25 *at* 2*s.* 6*d. each, and* 100, 7*s.* 6*d. each.*

Reports indicate that Antipyrin has been given by physicians to patients under their supervision with success. For this purpose it is most efficacious perhaps in cases of pyrexia, and in subacute rheumatism it relieves pain. If in any case it should not agree with the stomach, it should be given in enemata.

To reduce Fever—in typhus and typhoid fevers, phthisis, and pyretic states in adults or infants.

To Check Bleeding—from the nares, throat, lungs, bowels, genito-urinary tract, and external parts. Experiments have been made showing its superiority to Iron and Ergotine.

To Relieve Pain—as in megrim, neuralgia, *rheumatism*, zona, lumbago, sciatica, angina pectoris, biliary and renal colic, painful menstruation, and locomotor ataxia.

In Inflammation—to cut short an attack of erysipelas, etc.

As an Anti-Rheumatic—where the salicylates and other drugs have failed.

For epilepsy, St. Vitus dance, and other spasmodic conditions.

To prevent Sea-sickness—by Dupuy and many others.

For Whooping Cough, asthma, and bronchitic shortness of breath.

The administration of Antipyrin has occasionally been followed by an insignificant eruption resembling erythema or urticaria. In cases with weak heart it should be given with a watchful care. Full doses usually reduce temperature for about six hours, and often for a couple of days. It is best not to take such large quantities at one dose as have sometimes been recommended. The dose is from one to four 5 gr. Tabloids, which may be required to be repeated twice in the course of a couple of hours. The drug is reputed to agree well with children, to whom as many 1½ gr. doses as the child is years old may be given hourly till the fever is lowered.

SULPHONAL TABLOIDS.

A SAFE HYPNOTIC.

Tabloids supplied in bottles of 25 *at* 5*s.* 6*d.*, *and* 100, 16*s.*

Sulphonal is an oxidation product of the union of ethyl nurcaptan and acetone.

It is claimed to "be of much service when sleeplessness is persistent without any organic disease. It leaves no bad effects, and posesses none of the dangers of other narcotics in its administration. It produces calm normal sleep, with the feeling of being refreshed after its use." It is tasteless and odourless.

Sulphonal is said not to interfere with digestion, does not affect the temperature, pulse, or respiration, and its use for weeks does not exhaust the body.

The *British Medical Journal* reports upon Sulphonal as follows :—

"Twenty experiments with Sulphonal on healthy men show that doses of three or four grammes were borne by adults without the least discomfort or disagreeable after-effect. . . .

"Employed medically the drug has been given to 60 patients, and 300 observations of its effects were made (Professor Cramer gave it 200 times in the Marburg Lunatic Asylum). The results, almost without exception, were that the patients sank within from half an hour to two hours into a tranquil and sound sleep, lasting from five to eight hours, and awoke feeling perfectly comfortable. A few felt tired and sleepy next day."

While fifteen grains is considered sufficient for a woman, somewhat more is required in a strong healthy man. As much as forty-five grains have sometimes been given. Rabbas concludes, from 220 trials, that Sulphonal acts with greater certainty and better "results than amyl hydride or paraldehyde," and acts quicker and for a longer time than chloral. When narcotics have been long administered "it has been found useful."

As Sulphonal is comparatively insoluble, and does not make good mixtures or pills, the Tabloids are about the only eligible form of the drug. Each Tabloid contains 5 *grains.*

TABLOIDS
OF
TRITURATED DRUGS.

A Safer, Pleasanter, and more Active and Convenient Medication for Infants, the Fastidious and Idiosyncratic.

To derive the fullest nutritive benefits from food, it must not be thrown into the circulation in too great quantities at once. It is well known that digested albuminous products are poisonous, but that their toxic effect is prevented by their gradual passage through the liver onward. The strange sense of malaise, and weakness of the lower limbs, frequently felt after a meal, are attributed by authorities to the toxic properties of food. If, then, the nutritive effects of food depend in a measure upon its slow introduction into the system, is there not, on this line of reasoning alone, much reason for believing that in administering powerful drugs the same principles hold good? But whether there be logic herein or not, certainly many of the drugs now given are so active and pronounced in their effects that much care has to be exercised as to the way they are given to infants, delicate people, and, indeed, not only to patients whose idiosyncrasies are unknown, but to all. To many it doubtless seems strange that no mode of administering drugs has been adopted whereby people's idiosyncrasies might be taken into account and allowed for in a really practical way.

The latest, and seemingly, to not a few, the most important advance made for some time, is the Tabloid Triturates, which afford a far safer, pleasanter, and more reliable and convenient mode of medication for infants, the fastidious and idiosyncratic, than the usual method of giving medicine. Before, however, giving a résumé of their advantages, as pointed out by medical men, an intimation of what the "Tabloid" Triturates are will be apropos.

WHAT ARE "TABLOID" TRITURATES?

The Compressed "Tabloid" Triturates are "intimate mixtures of substances with sugar of milk." In no way are they allied to the sugar of milk globules or pellets, dependent so largely upon chance for the absorption of the medicaments poured down the side of the bottle. Each of them contains a small, though accurate, uniform, and appreciable dose. The following directions are those given in the Pharmacopœia, U.S., for the preparation of Triturates: "Take of the substance ten parts, sugar of milk in moderately fine powder ninety parts, to make one hundred parts; weigh the substance and the sugar of milk separately; then place the substance, previously reduced if necessary to a moderately fine powder in a mortar, add about an equal bulk of sugar of milk, mix well by means of a spatula and triturate them thoroughly together. Add fresh portions of the sugar of milk from time to time, until the whole be added, and continue the trituration until the substance be intimately mixed with the sugar of milk and finely comminuted."

RÉSUMÉ OF ADVANTAGES OF THE "TABLOID" TRITURATES.

1. The "Tabloid" Triturates are made by compressing a small, uniform, and appreciable dose of medicine, triturated with sugar of milk, into lenticular form. The process of trituration employed so finely subdivides and separates the mass of medicament, that this has been alleged by some therapeutists to be more active therapeutically than it would be if given in the ordinary way.*

2. Being made with sugar of milk, one of them (if not taken whole) added to a little milk or other fluid, is at once disintegrated or dissolved. Where there are pulverulent substances (like calomel) present, they are so well incorporated with the mass of sugar of milk, that when this is dissolved, they are distributed equally for the moment throughout the fluid.

3. One of the most important features of the "Tabloid" Triturates is the fact that they contain small doses, and are for frequent repetition. As a matter of safety this is of

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* One eminent therapeutist reports as follows: "Triturates have been used in medicine and have been sanctioned by the Pharmacopœia from time immemorial. Blue Pill and Grey Powder," he says, "are both true Triturates. So eminent and respected an authority as Sir Alfred Garrod, in his well-known text-book of *Materia Medica*, says: 'They owe their value to the presence of mercury in a very highly divided state, caused by trituration.' Metallic mercury itself is inert."

the greatest moment. Brunton has pointed out that the introduction of the method of giving small doses at frequent intervals has "**the very great advantage that the desired effect can be produced with greater certainty and with less risk of an overdose being taken.**"

Seemingly, the greater certainty and diminished risk of an overdose should alone be sufficient to commend this improved form of drugs to the medical profession. Already leading authorities have adopted "Tabloid" Triturates in practice. A *greater* effect is said to be obtainable from small doses of medicine frequently repeated than is possible from the aggregate amount administered in a single dose. Of this, of course, we express no opinion. In some cases, "Tabloid" Triturates are repeated as often as every five or ten minutes—and how soon a very small dose of medicine repeated at such brief intervals will amount to a goodly quantity it is not necessary to point out!

4. When contrasted with pills, the objections to the latter come out in *bold relief.* Pills roll about the mouth, and are so difficult to swallow that many cannot get them down. Moreover, they are apt to "stick in the throat." All this is in no sense the case with the "Tabloid" Triturates, which are easy to swallow. Being lenticular (and not globular) they do not roll forward on the tongue as one is about to swallow, nor do they stick in the throat.

5. They present another very obvious advantage over pills, in that they do not harden and become insoluble with time, nor do they crumble in the bottle. If swallowed whole, one of them never fails to dissolve and fall to pieces in the stomach at once, and is never voided unchanged, as pills often are.

6. A point common not only to the "Tabloid" Triturates but to the compressed Hypodermic "Tabloids," and the Tabloids in general, is that they afford accuracy of dose, without the trouble and annoyance of weighing and measuring. They can be taken at any time and in any place, even n the patient is pursuing his ordinary avocation. They are of tiny size.

7. The "Tabloid" Triturates afford all the advantages

derivable from the administration of small doses repeated often, which may be summarised somewhat as follows:

(*a*) If the "Tabloid" Triturates be dissolved *in a little liquid* (as is necessary in young children) the absorbent power of the mucous membrane of the mouth and gullet, as well as that of the stomach, is called repeatedly into requisition.

(*b*) The medicament is not apt to disturb the stomach, as it is in large doses.

(*c*) The taste of bitter drugs is very little noticed.

(*d*) The Tabloid Triturates are the most eligible form of drugs for infants and fastidious patients. For the former the Tabloid should of course be dissolved before giving it.

LIST OF TABLOID TRITURATES.

Bottles of 100.
Retail price, 1s.

Aconite Tinct.	1 min.
Arsenious Acid	1/100 and 1/50 gr.
Belladonna Tinct.	1 min.
Calcium Sulphide	1/10 gr.
Capsicum Tinct.	1 min.
Digitalis Tinct.	1 min.
Hydrarg. Perchlor.	1/100 gr.
Hydrarg. Cum Cretæ ..	1/3 gr.
Hydrarg. Subchlor. (Calomel)	1/10 gr.
Hyoscyamus Tinct.	1 min.
Nux Vomica Tinct.	2 min.
Tinct. Camph. Co. (Paregoric)	1 min.

Bottles of 50.
Retail price, 1s.

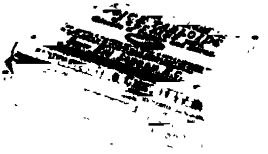
Anti-Constipation	Aloin 1-5. Strych. 1-60 gr. Belladon. Ex. 1-8 gr. Ipecac. 1-16 gr.
Apomorphine Mur.	1/50 gr.
	1/100 gr.
Digitalin ..	1/100 gr.
Euonymin Resin	1/8 gr.
Hydrarg. Iod. Rub.	1/20 gr.
Hydrarg. Iod. Vir.	1/8 gr.
Morphine Sulph.	and 1/8 gr.
Opium Tinct. (Laudanum)	2 min.
Pilocarpin Mur.	1/20 gr.
Podophyllin Resin ..	1/4 gr.
Santonin	
Strophanthus Tinct. ..	2 min.

Waistcoat Pocket Cases, containing 10 *tubes of* 25 *Tabloids each* (*any selection*), 5/-; *with* 16 *tubes*, 8/6; *with* 24 *tubes*, 14/-.

THROAT and VOICE.

VOICE TABLOIDS.

Composed of COCAINE, *Chlorate of Potash, and Borax.*



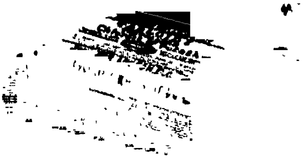
Impart a clear and silvery tone to the voice. Easily retained in the mouth while singing or speaking. Now used by the leading singers and public speakers throughout the world.

DIRECTIONS.—A single Tabloid may be slowly dissolved in the mouth to remove huskiness or hoarseness.

Supplied in beautifully graven white metal boxes, blue silk label, at 1s. and 2s. per box.

CHLORATE OF POTASH TABLOIDS.

FOR AFFECTIONS OF THE VOICE, THROAT, AND RESPIRATORY SURFACES GENERALLY.



By using the Tabloids the drug is effectually brought in contact with the oral mucous surfaces as a continuous gargle, and its specific action made certain. In acute sore-throat, Chlorate of Potash "usually relieves the uneasiness in a few hours" (Cohen). "It is used in ulcerated mouth and follicular pharyngitis, and has been employed in croup, diphtheria, and spasm of the larynx" (Brunton).

"Of convenient size, they are beautifully made; and, as they dissolve slowly in the mouth, are well suited for throat affections."—THE LANCET.

Supplied in beautifully graven white metal boxes, blue silk label, at 6d. and 1s. each.

CHLORATE OF POTASH AND BORAX TABLOIDS.

The Tabloids afford an agreeable form in which to administer Chlorate of Potash and Borax.

Supplied in beautifully graven white metal boxes, pink silk label, at 6d. and 1s. each.

CHLORIDE OF AMMONIUM TABLOIDS.

"The solvent and discutient as well as antiphlogistic powers of Chloride of Ammonium are well known, and have led to its extensive employment, especially in Germany, in cases of sore-throat and bronchitis, attended with abundant secretion of thick and tough mucus or phlegm. Physicians will at once appreciate the great advantage to their patients of the local effects of this salt slowly dissolving and coming in direct contact with the inflamed surface. It at once mitigates the cough or irritation, and lessens expectoration. Two or three of the Tabloids will sometimes entirely relieve coughs that have long resisted treatment with ordinary remedies. One may be dissolved occasionally on the middle of the tongue, not near the tip.

Supplied in bottles, at 6d. and 1s. 6d. each.

SAL PRUNELLA TABLOIDS.

(NITRATE OF POTASH.)

"A popular remedy, sometimes successful in mild cases of incipient inflammatory sore-throat, is a small piece of nitre allowed to dissolve slowly in the mouth" (Waring). An excellent saline for throat cases, having very marked local efficacy when slowly dissolved on the tongue. It is a popular remedy, and for mild inflamed sore-throat its ancient reputation is deserved.

DIRECTIONS.—One or more (5 gr.) Tabloids should be dissolved slowly in the mouth for the local effect.

Supplied in bottles of 100 at 1s. 6d. each.

HAZELINE.

This drug is highly commended by the British Medical Association's Committee on Therapeutics. Hazeline, being prepared from the fresh green twigs, contains all the valuable volatile principles of the plant Witch Hazel, and is much more uniform and reliable in its action than are the tinctures, fluid extracts, etc., prepared from the dried bark.

The Witch Hazel Plant.

DIRECTIONS.

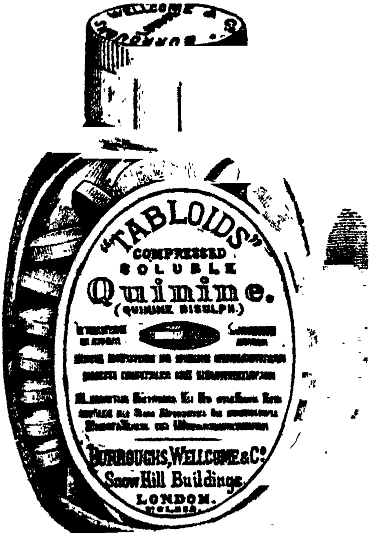
In catarrh or cold in the head, may be snuffed up the nostrils with an equal part of tepid water.

Dose for irritated or inflamed throat and lungs, half to one teaspoonful occasionally.

Supplied in ¼-lb. and 1-lb. bottles, at 1s. 6d. and 4s. 6d. retail.

DOVER POWDER TABLOIDS.

The medical properties of Dover Powder are well known. This is the best form for administration.



QUININE TABLOIDS.

The Tabloids of Compressed Soluble Quinine are now prescribed by the leading physicians of Europe in preference to any other form of the drug, in the treatment of fevers and all other cases in which Quinine is indicated. They dissolve and act on the system quicker than ordinary pills or powders, they are easier to swallow, and can be dispensed by Chemists at the same price that they charge for powders.

	Retail.
*Quinine, ½ gr., Vinaigrette style (oval bots., 50 in each) ...	1/0
" " 100 in bottle	1/6
1 gr., Vinaigrette style (oval bots., 36 in each) ...	1/0

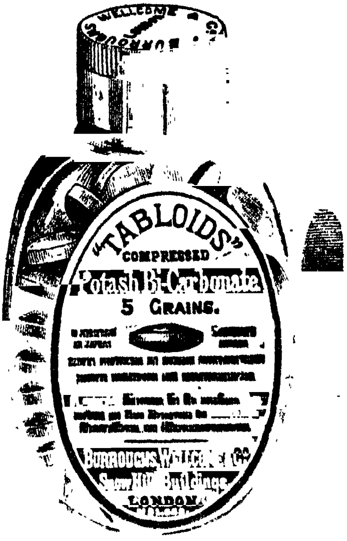
	Retail.
*Quinine 1 gr., 100 in bottle	1/9
* 2 gr., Vinaigrette style (oval bots., 24 in each) ...	1/0
3 gr., 100 in bottle	2/9
„ Vinaigrette style (oval bots., 24 in each) ...	1/6
„ 100 in bottle	3/9
5 gr., Vinaigrette style (oval bots., 24 in each) ...	2/0
„ 100 in bottle	5/6
*Quinia Sulph., 1 gr.; Ferri Redact., 1 gr.; Arsenic, 1/20 gr.; Strychnia, 1/30 gr., 100 in bottle	4/0
*Quinia Sulph., 1 gr.; Arsenic, 1/20 gr.; Strychnia, 1/30 gr., 100 in bottle	4/0

* Subject to fluctuations of the Market.

SACCHARIN TABLOIDS.

One or two tiny Tabloids of Saccharin added to a cup of tea, coffee, or cocoa—in lieu of as many lumps of sugar—will impart to it a sweet and delicate flavour, and leave a pleasant remembrance on the palate. The Saccharin Tabloids are now being used on the tables of many distinguished people as a delicacy, in preference to the ordinary tea and coffee sugars, as it does not impair the aroma of the choicest tea or coffee.

	Retail.
Saccharin, ½ gr. Tubes, containing 24	6*d.*
„ „ „ „ 60	1/0
Vinaigrette (oval bottles, 200 in each)	2/6

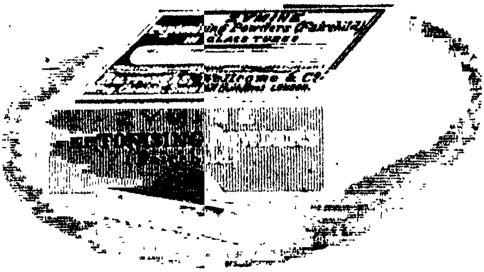


TABLOIDS OF POTASSIUM BICARBONATE AND SODIUM BICARBONATE.

The Tabloids of Potassium Bicarbonate (5 gr.) and the Sodium Bicarbonate (5 gr.) are far easier to take than solutions or pills, and may be swallowed without the taste or the alkali being perceived.

	Retail.
Potash Bicarb., 5 gr., Vinaigrette style (oval bots., 30 in each)	6*d.*
„ „ „ 100 in bottle	1/6
Soda Bicarbonate, 5 gr., Vinaigrette style (oval bots., 30 in each)	6*d.*
„ „ „ 100 in bottle	1/6

ZYMINE PEPTONISING POWDERS (FAIRCHILD).



Indigestibility means insolubility, and the indigestibility of cow's milk as compared with mother's milk lies in the insolubility (or toughness) of its casein.

The great danger of cow's milk to invalids and infants is that it forms dense, heavy, indigestible curds, which irritate and influence the stomach, and are the occasion of much mischief in infant feeding, dyspepsia, typhoid fever, etc. Mother's milk does not curdle, and if cow milk's is to be administered, neither should it curdle. To prevent the usual curdling, all that is necessary is to add to each pint of milk a "Zymine" Peptonising Powder (Fairchild). Any nurse or domestic can prepare milk with these powders, so simple is their use, and the milk prepared with them will be as sweet and palatable as mother's milk, and quite as nutritious.

ZYMINE PEPTONISING POWDERS (FAIRCHILD).

	Retail.
Boxes containing 1 dozen tubes	2/0

LONDON . WHITING & Co., 30 AND 32, SARDINIA STREET, W.C